

OFFICE COPY

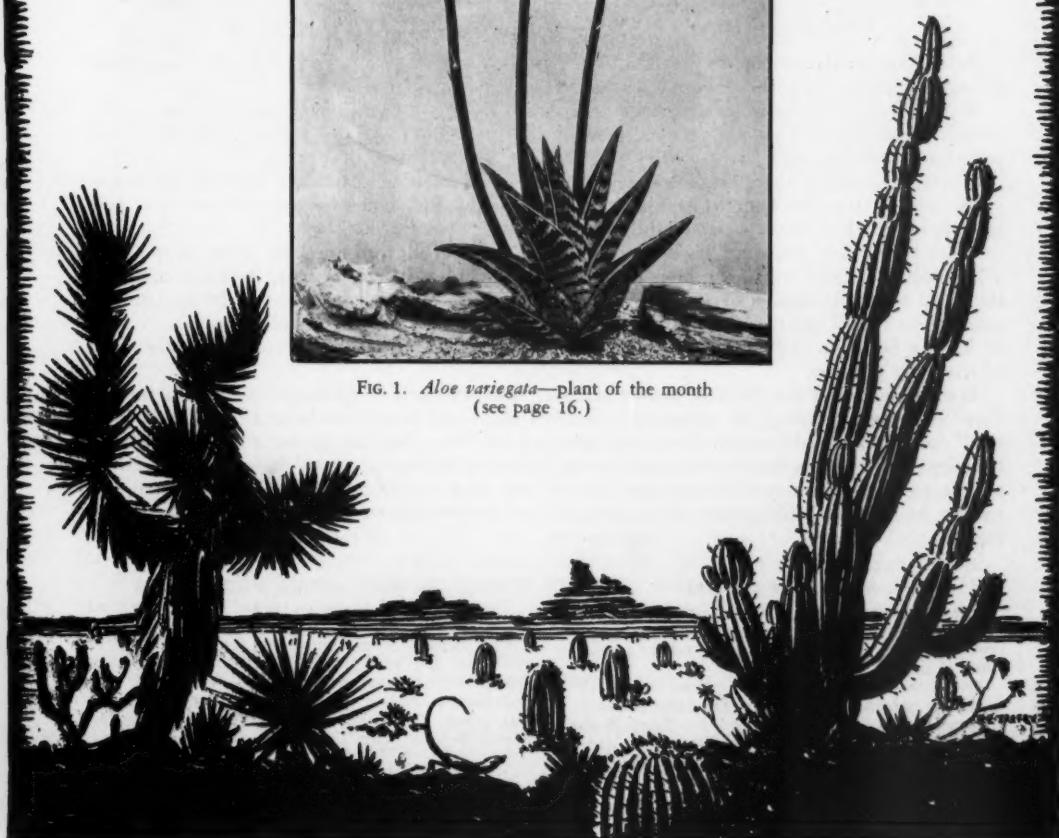
CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society
Of America

Vol. XXVI JAN.-FEB., 1954 No. 1



FIG. 1. *Aloe variegata*—plant of the month
(see page 16.)



CACTUS AND SUCCULENT JOURNAL

Published and owned by the Cactus and Succulent Society of America, Inc., 132 W. Union St., Pasadena, Calif. A magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. North and South America \$3.00 per year; foreign \$3.50 by money order. Mail application to SCOTT HASELTON, Editor, 132 West Union Street, Pasadena 1, California. *Editorial Staff: THE ENTIRE SOCIETY.* Entered as Second Class Matter at Pasadena, Calif., under act of March 3, 1879. Published bi-monthly. We reserve the right to accept or reject advertising or articles sent to this JOURNAL.

Vol. XXVI

JANUARY-FEBRUARY, 1954 (Price 50c)

No. 1

The Rocks Near Carmel.....	J. R. Brown	3
Questions and Answers.....	Harry Johnson	11
Cactophile's Vacation.....	John R. Kelsey	13
More About Mexico.....	Howard E. Gates	14
Plant of the Month— <i>Aloe variegata</i>	G. W. Reynolds	16
<i>Aloe ausana</i>	R. W. Poindexter	17
The Spectacular Aloe—South African Charmer.....	E. C. Hummel	18
The Habitat Range of <i>Nyctocerens chontalensis</i>	T. MacDougall	21
Corsages from Succulents.....	Elizabeth H. Genrich	22
Naming Varieties of Cacti and Other Succulents.....	H. M. Butterfield	26
Observations in an Arizona Garden.....	Wm. Mastrangel	29
Easy to Grow Indoors—Kalanchoes.....	Sunset Magazine	30
The Sharp Point.....	Leon Kelso	31
New Species from Switzerland.....	H. Krainz	32
"Arizona Flora" Book Review.....		33
From the President's Desk.....	Homer Rush	34
Spine Chats.....	Ladislaus Cutak	35

EDITORIAL

According to expectations, 1954 is starting off with increased enthusiasm—from the many plans of our new President to the prompt renewals of the JOURNAL.

We appreciate the many greetings and complimentary notes attached to the renewal notices. We would like to answer each one personally but since that is impossible we will endeavor to let the JOURNAL speak for us.

Several have asked about binding the JOURNALS. We will bind JOURNALS again at the end of 1954. By that time we hope to have a list of the available back issues for members who may wish to complete back volumes or add others to their files.

After twenty-five years we have decided to make the following definite editorial policies: 1. Authors of articles will carry the person's name without his degrees or rank. A by-line may state the name of the institution or position of the author. 2. The major decision will be the use of a small letter for all specific names of plants, without exception. This is according to the decisions of leading botanists and the International Botanical Congress. This will also conform to the usage of the other sciences.

The greatest need for the new year is material that will help beginners. The experiences of those who have mastered the culture of succulents should be passed on to amateurs. Those with small collections should send in their questions and tell what they are growing and discuss their troubles. At the recent Board meeting of the Society, each member promised to furnish two articles of material for beginners. We hope that this will set an example for distant members and that readers in 1954 will find plenty of readable articles sandwiched in between the scientific contributions.

SCOTT E. HASELTON

ELECTION OF OFFICERS

The election of Officers for 1954 for the Cactus and Succulent Society of America, Inc., completed on December 15th, produced the following results upon the count of the ballots:

President.....	Homer G. Rush
Vice-President.....	Dr. Lyman Benson
Secretary.....	Ethel Rush
Treasurer.....	George G. Glade
Board of Directors for a four year term: Dr. Robert	

T. Craig, John Akers, and Robert Killian.

There were two vacancies created on the Board of Directors, due to the election of Homer Rush and Dr. Lyman Benson. These unexpired terms are both for two years and were filled, by vote of the Executive Board, with the following persons. To fill the two year unexpired term of Homer Rush, Jack Whitehead was chosen. To fill the two year unexpired term of Dr. Lyman Benson, Mace Taylor was chosen.

ETHEL RUSH, Secretary.



FIG. 2. *Dudleya farinosa* (Lindl.) Br. & Rose nat. size.

The Rocks Near Carmel

By J. R. BROWN

One of the most interesting and picturesque regions of the California coast lies in the Monterey peninsula and its adjacent area, situated about 350 miles north from Los Angeles and about 100 miles below San Francisco. Rich in Early California history, it is also endowed with beautiful scenery and plant life; an ideal spot for the naturalist, where he can enjoy his favorite pursuit, no matter what the particular interest may be.

To those interested in plant life, the name Monterey is probably most easily identified with the trees, Monterey Cypress (*Cupressus macrocarpa*) and the Monterey Pine (*Pinus radiata*), and it is only in this area on a few miles of coastline that the Monterey Cypress has its native home, and many of them, when growing

directly on the rocky, spray and wind whipped shores, have taken on the most remarkably fantastic and twisted shapes.

About the year 1846 a young botanist named Karl Theodore Hartweg was on a collecting journey for the Horticultural Society of London and eventually arrived in California from Mexico where he had been collecting plant material. He it was, while at Monterey, who noticed the tree now known as Monterey Cypress and named it *Cupressus macrocarpa*.

Among the plants sent back to London by Hartweg were some considered to be Echeverias by Lindley and one of them was named *Echeveria farinosa* (Journ. Hort. Soc. 4: 292. 1849) and Lindley gives the locality of this plant as "Rocks near Carmel Bay in California" and it is

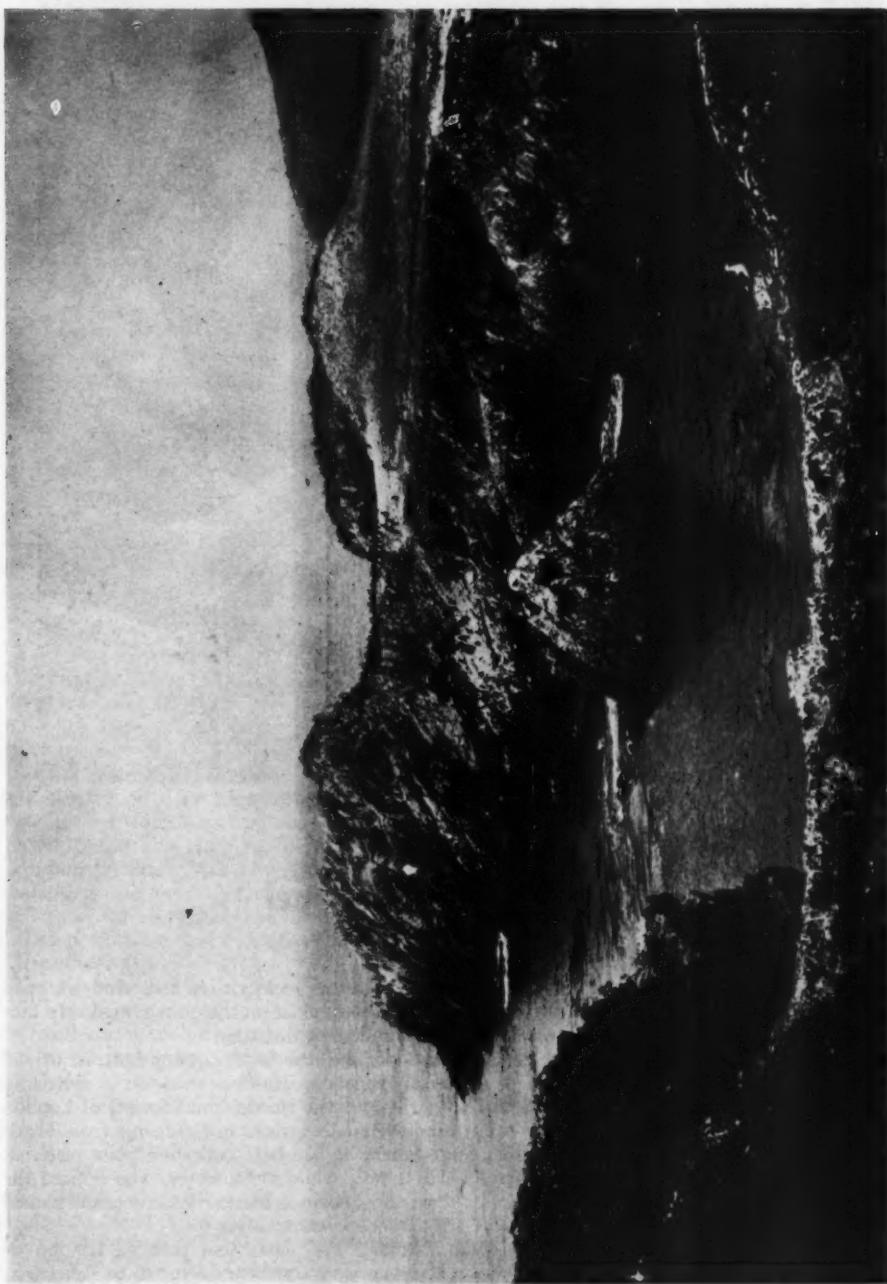


FIG. 3. Looking towards Bird Island with *Dudleya farinosa* on the rocks in foreground.



FIG. 4. A distant view of *Dudleya farinosa* on the cliffs. The size of the plants can be compared with the sea gull at top center.

this plant that we are especially interested in at this time.

A little to the south of Carmel lies an exceptionally fine park known as the Point Lobos Reserve State Park, this park is a sanctuary for plant and animal life and within it lies the sole remaining natural grove of Monterey Cypress. The coast line here is very rugged and the Spaniards who were the first settlers at Monterey named the seaward point in this park, Punta de los Lobos Marinos (the Point of the Seals) because of the seals on the rocks just off this point, the name being now shortened to Point Lobos.

While the plant, which we will now call *Dudleya farinosa*, is to be seen all along the coast in this area it was in this Point Lobos Park that the Dudleya was seen at its best. A short distance from Carmel Bay, at the southern end of the park it is growing in large and vigorous clumps showing to great advantage against the rocky background and no doubt they are growing now just as they were long before this coast was seen by white men; no doubt due in large part to the inaccessibility of the plants and in more recent times to the careful regulations maintained in this Reserve.

At this particular place this Dudleya does not seem to extend far from the ocean front, its place on top of the bluffs being taken over by *Dudleya caespitosa* which in turn does not seem to venture onto the steeper rocks. Sometimes one may see *Dudleya farinosa* referred to as the Cliff Lettuce and *Dudleya caespitosa* as the Bluff Lettuce. While gazing at this Dudleya growing on the cliffs and the rocks to seaward it gave the impression of a close association with the sea; the screaming of the gulls, the sound of the waves and the sea fog all adding to this impression. Exposure seemed of little importance as it was growing exposed to all points of the compass.

It was rather difficult to find a plant in flower close enough for examination but a few scattered plants were found on Point Lobos itself. The ground here is more gently sloping to the beach and the plants were growing on the flatter ground and widely scattered through the other herbage. This was in the latter part of the month of July and quite evidently at the beginning of the flowering season of *Dudleya farinosa*, as only a few flowers were open; *Dudleya caespitosa* on the other hand was in the later stages of flowering. No very old plants were found however, and it may be that they are easily proliferated from this part of the Reserve.

Dense mats of the Mesembryanthemum, *Carpobrotus chilensis* (Molina) N. E. Br. were growing here, this Mesembryanthemum ranges from the coasts of Chile to those of Southern

Oregon. The pretty Beach Aster (*Erigeron glaucus*) was also noticed, but there were many plants of the coast in flower, Lupins, Eriogonums Castillejas, etc. This area directly around the Point is well trampled as it is here that visitors come to look towards the seal rocks, but without field glasses little can be seen but much may be heard, as the continuous bellowing of the sea lions dominates all other sounds.

The plants of *Dudleya farinosa* growing on the flatter ground at the Point seem to vary a little from those growing on the steeper rocks, having thicker, shorter and blunter leaves and are very attractive, the tips of the leaves a bright cherry-red.

Dudleya farinosa (Lindl.) Britt. & Rose in Bull. N. Y. Bot. Gdn. 3: 15. 1903.

Plant caulescent. Leaves of the rosettes erect-spreading, lingulate, acute, dilated at base, 5-10 cm. long to 2 cm. broad, somewhat flat on face, the back lightly rounded; the younger leaves white-farinose becoming glaucous green with age. Flowering stems about 30 cm. high, stout, with numerous broadly ovate-auriculate leaves to 2 cm. long, the lobes more or less turned upwards; flower bracts 4-6 mm. long; pedicels stout, about 4 mm. long; calyx segments broadly lanceolate, about 6 mm. long; corolla about 15 mm. long, clear lemon-yellow.

In the natural state the flower stems, stem leaves, bracts, pedicels and sepals are white-farinose and this Dudleya has a distinctly clear-cut appearance.

Baker described this Dudleya under the name *Cotyledon farinosa* in Saund. Refug. Bot. 1: pl. 71. 1869 and his fig. is reproduced here, as it was not possible to secure a photograph of a suitable flowering plant at Carmel.

The leaves in this fig. are somewhat more acuminate than they are in the natural state; the somewhat clasping lobes of the stem leaves may or may not be turned upwards; the turned up tips of many of the leaves will also be noted. This is not a constant character in this Dudleya, but seems to occur in many Dudleyas to a greater or less degree and has been noticed as the cooler weather of winter comes along; the cause of this is not definitely known.

Dudleya farinosa probably ranges far up the coast and *Dudleya septentrionalis* of the North California coast may belong here. Howell (Fl. N. W. America 1: 214. 1903) under *Cotyledon farinosa* gives the locality as "At the mouth of the Chetco River, Oregon." This is the same plant as *Dudleya septentrionalis* and I seem to recall having seen this Dudleya more to the northward, but this was so long ago that I am not positive at this time.

While we are not especially concerned with



FIG. 5. A somewhat closer views of *Dudleya farinosa* on the cliffs.

Dudleya caespitosa here, it has been mentioned and a few notes may be added. There are hundreds of plants of this *Dudleya* on top of the bluffs at the southern end of the Reserve, but when the plants are not in flower they could be

comparatively unnoticed, being almost completely hidden in the dense growth of other plants. The bright yellow flowers are borne on erect stems which surmount most of the surrounding herbage and are quite conspicuous. One of the



FIG. 6. Showing the long pendent stems of *Dudleya farinosa* as it grows on the cliffs.

plants of this Dudleya which was somewhat exposed at the side of the trail was photographed although most of this plant is more or less hidden. Old plants of this Dudleya have a great sprawling mass of rosettes and with main stems

as thick as one's wrist, or nearly so.

The Monterey Peninsula is a region of dense summer fogs and this combined with the wind makes photography somewhat difficult unless one is fortunate enough to be there on a day

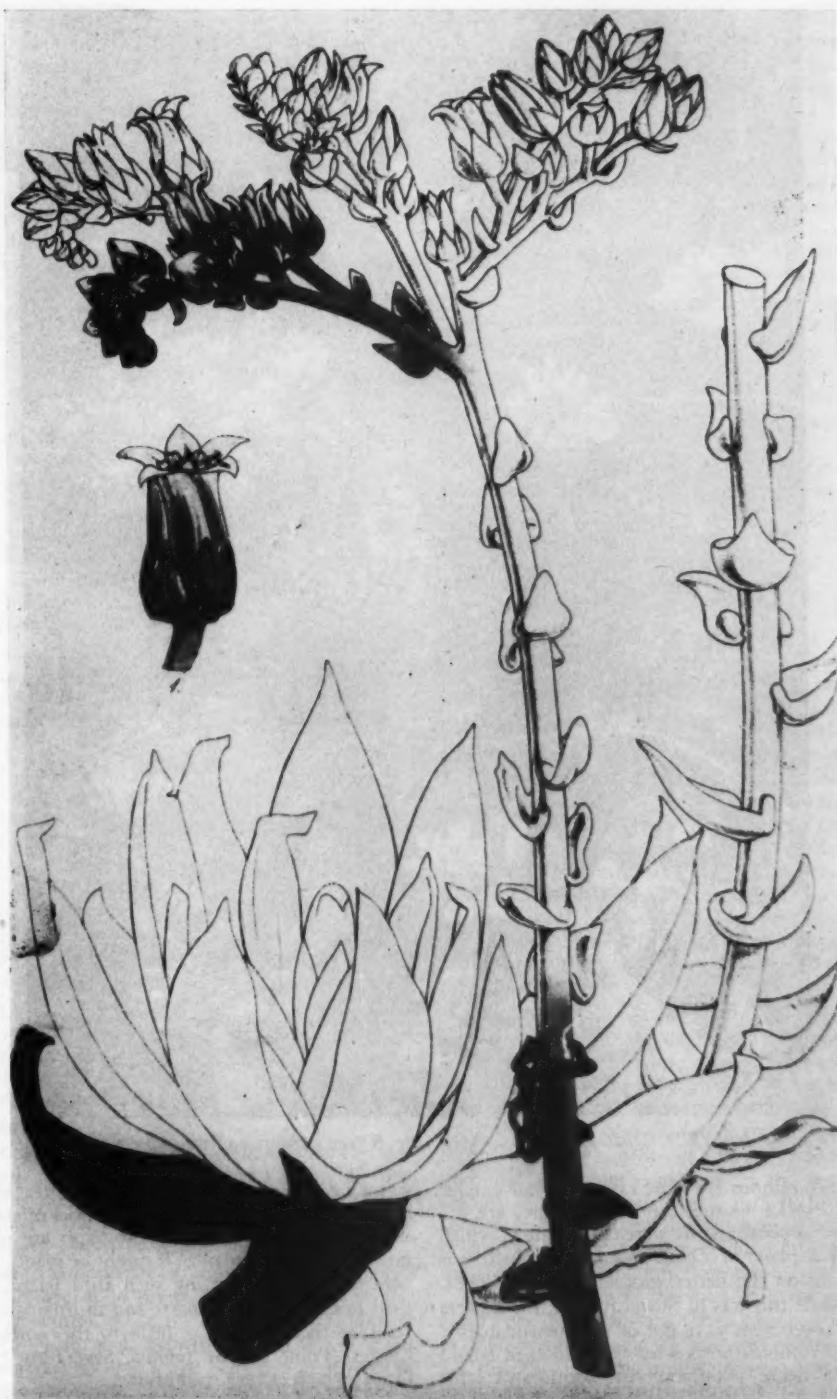


FIG. 7. *Cotyledon farinosa*. Copy of Baker's fig. from Saunders Refugium Botanicum.



FIG. 8. *Dudleya caespitosa* (Haw.) Br. & Rose at the side of the trail.

when conditions are more favorable, but one has often to take weather conditions as they are.

Several photographs were taken, one of which shows a plant of *Dudleya farinosa* which was growing on the flatter ground at Point Lobos, and while this was of flowering size, the flowers and flower stem were not of sufficient maturity. Another photo shows what is called Bird Island with a dense population of Cormorants; this

was taken not so much to show the sea birds but to show the Dudleyas on the rocks offshore, as the rocks seen in this photograph are separated from the mainland. It might be mentioned here that there are many such Bird Islands or Bird Rocks along the coasts and in this particular area there is one, a little to the north of Cypress Point on the famous Seventeen Mile Drive, which is very well known.



QUESTIONS and ANSWERS

Conducted by
HARRY JOHNSON
Paramount, Calif.

Question:

Can you tell me what the name is of a cactus that has well defined ribs and fine pectinate spines one half inch or less in length. I would like to know the names of a good white spined as well as darker spined kind if any. Mrs. Lester Tucker, Oregon.

Answer:

The plant you describe is probably an *Echinocereus*. There are several white, more or less pectinate spined ones. The easiest one to come by is *E. reichenbachii*. When wild collected plants are seen they are not always white as they are variable. Generally nursery raised seedlings are much whiter. Another is *E. pectinatus*. This is often quite white though it has many variations. One of the prettiest is *E. pectinatus castaneus* a Mexican form which bears bands of spines in different colors somewhat like the old *E. rigidissimus*. *Echinocereus melanocentrus*, an Oklahoma segregate, is a very free flowering, dark spined one. It flowers when quite tiny and the blossoms large and bright pink. *Echinocereus fitchii* has brown or chestnut-colored spines and large, frilled blossoms of light pink; an exquisite free flowering plant. *E. longispinus*, another Oklahoma plant, has pale brownish yellow, longer spines and lovely pink flowers. *E. dasycanthus* has brownish spines, almost white on new growth, and extremely large yellow blossoms which are often 5 inches across; it is generally a tall, solitary plant. Almost all the *Echinocereus* are splendid plants for the small collection especially the solitary or non-cluster-forming types above described. The soft, succulent stemmed, cluster forming species are more suitable for the larger collection or outdoor garden. Most are quite cold resistant, some take below zero temperatures in their native habitats.

Question:

Some of my cacti (Gymnocalycium) are showing buds (December) and starting to grow. Is this unusual and should they grow at this season? Fred Locksley, Michigan.

Answer:

South American cacti and South African succulents are quite prone to start growth in the fall or winter. As to the rightness or wrongness of fostering such growth you could get arguments. Let us look at the facts and then you can choose your own cultural methods. As you know the seasons are reversed south of the equator;

our winter solstice, December 21st, is the Argentine and South African summer solstice when the sun is farthest south. Our autumnal equinox about September 22nd is their beginning of spring or vernal equinox. Of course in desert regions, plants follow the rainy season in their growth and this does not always coincide with the apparent seasons which may actually give two or three months time lag. So, normally, sometime after the end of September many southern plants are fretting to grow. All they need to start is an ascending temperature, moisture and, unquestionably in many plants, a lengthening day. This latter factor is sometimes overlooked but I believe is really, in the great bulk of plants, the true trigger mechanism. This probably accounts for southern plants reversing their seasonal growth and adapting themselves completely to our northern seasons. Some groups, with us, will grow with the advent of our autumnal equinox. The outstanding example is *Lithops* which flower in the fall and grow slowly all winter finishing their growth in late spring. Most cacti are very amenable and if not encouraged to grow in fall do not do so.

However, in the window garden one cannot always control conditions. If rooms are kept warm, say 72°, quite a bit of moisture must be given to keep plants from shriveling. The heat and warmth may, and often does, start growth. Here is where the arguments start. Shall one encourage the growth or give up and collect stamps! Experience shows that if one is presented with a fait accompli it is best to make the most of it possible. The two greatest aids to normal healthy plant growth are fresh air and sunlight — both notably absent in a normal winter window garden in our north. Reasonably healthy growth can be maintained by giving the plants as light a position as possible and cutting water to a minimum, forcing the plants to grow very slowly. This will prevent them from growing out to a point or becoming etiolated. Such winter growth, unfortunately, is seldom sufficiently matured to flower well. Some species, when forced in the fall, produce buds before starting much areole growth. *Gymnocalycium*, particularly those near *G. damii* and *G. mihanovichii*, will bud and flower. Buds, or their beginnings are latently nascent in the matured areoles of the previous season growth of many species and need only the quickening impulse of spring, or what they are deluded into believing is spring, to burst into flower.

Our Mexican cacti that flower in the winter are a very different story. They are quite happy in their winter blooming and my observations are that they are not producing new areoles or in other words actually growing but simply, when the weather is bright and clear, shooting

out these nascent buds and taking advantage of such insects as are sure to be around to get their flowers pollinated and get an extra crop of seeds matured. These seed pods in the case of *Mammillarias* such as *M. babbniana* may not develop until the following growing season. *Mammillaria* is about the only genus that my observations confirm does this and has the invaginated ovary.

ASSOCIATE MEMBERSHIP

It has been brought to my attention quite a number of times recently that many persons would like to become Associate Members of the Cactus and Succulent Society of America, Inc., but seem not to realize that such a thing is in any way possible.

Ever since the organization of the Cactus and Succulent Society of America, Inc., in 1929, the By-Laws have provided for this by including the following section in its make-up:

BY-LAWS, ARTICLE I, MEMBERS, Section 3. "An Associate Member is a member of the immediate family of an Active Member, who on application for Associate Membership and payment of the annual dues of one dollar, in advance, on acceptance by the Board, acquires all the rights and privileges of Active Membership, but does not receive the JOURNAL."

This provision then, makes it possible for your wife or husband, as the case may be, or a grown son or daughter living at home, to become an Associate Member simply by sending their application along with one dollar and a statement of the family connection, to the Secretary, asking to become an Associate Member.

Due to some slip-up or oversight this has never been sufficiently publicized and so far as I know only the people in the area of Los Angeles have taken much advantage of it. There are a number of Associate Members in the local area and there have been one or two others in the central and eastern part of the country.

An Associate Member has the right to vote on elections, to write for or publish in the JOURNAL, to attend all meetings of the Society and to take an active part in any and all of the activities that they may wish to.

They will have the right to borrow books from the Society Library as soon as our Lending Library is finally established and can, by following prescribed procedure, borrow colored slide sets.

We are always happy to have the other members of an Active Member's family, take sufficient interest in our hobby to want to become an Associate Member and all that is necessary is to write to the Secretary, Ethel Rush, 820 W. 115th St., Los Angeles 44, Calif., making your application, stating your family affiliation and enclosing one dollar for a year's dues in advance.

Application for Associate Membership should always go to the Secretary of the Society and never to the Editor of the JOURNAL.

Now let's hear from all those who have written asking about this matter.

ETHEL RUSH, Secretary
820 W. 115th St.
Los Angeles 44, California

NOTES ON GLAZED POTS

Making drainage holes in glazed pots is not a difficult matter if one follows this method.

Place the pot, bottom end up, between your knees, hold a nail punch about one eighth of an inch above the pot and tap lightly with a small hammer. Do not

use too much energy as it is the constant tapping rather than the force of the blow that does the chipping.

Once the hard glaze is chipped off the hole is easily made to any desired size.

I have made as many as four to six holes in garden dishes this way and as yet have not had any breakage.

POT LABELS

Instead of sticking labels in your plant pots, taking the risk of mix up or loss, along with the identity of the plants, use this method.

Print the name of the plant with India or Indelible ink on the rim of the pot. When thoroughly dry coat with Spar Varnish.

This will give you a weatherproof label that will last at least two years and also aid you in keeping the plants in the same position.

ARTHUR WM. VOSS

FROM THE CACTUS CHRONICLE

The Cactus Chronicle is the official monthly bulletin of the Los Angeles Cactus & Succulent Society. Subscription rates: \$5 per year to members; \$1 per year to non-members, payable to the Secretary, Mr. Bob Gardner, 3110½ Montrose Ave., La Crescenta, Calif. Material for publication should be forwarded to the Editor, Mrs. Jaye Mayall, 2734 Brighton St., Burbank.

A reminder to those of you who are growing cacti and succulents from seed; keep the seedlings well protected from cold and keep them watered regularly to prevent the roots from drying out.

Epiphyllums can be watered regularly during January to prepare them for their blooming season which starts in March for some species.

Among the plants flowering in January will be *Cephalophyllum alstonii*, *acutum*, *tricolorum* and *anemoneiflorum*; *Cheiridopsis candidissima*; *Aloe salm-dyckiana*, *ferox* and *arborescens*; *Senecia speciosa*; *Sedum praealtum* and *oaxacanum*; *Crassula rupestris*, *multicava* and *argentea*; *Bergeranthus scapiger*; *Bulbine latifolia*; *Rabiea albinota*; *Odontophorus primulinus*; *Bryophyllum fedtschenkoi* and *subiflorum*.

Among the Bryophyllums are several very interesting plants but one in particular is well-known to nearly every collector of succulent plants, *Bryophyllum subiflorum* Harvey, being more or less indigenous to practically all tropical or semi-tropical portions of the world. It has become a common sight in most succulent gardens as like all Bryophyllums it perpetuates itself by the formation of many new plantlets each year, in the leaf crevices, which when they fall quickly take root and form plants.

It is not necessarily one of the best house plants, but always fills the requirements of a novel foliage plant in the house, and in the garden is both showy and a free flowering species. There has never been any doubt about its high rank among showy flowering plants.

Bryophyllum tubiflorum and *Bryophyllum diagremontianum* share the doubtful distinction of being the most common plants in this genus and is quite often found in the five and ten cent stores. As was mentioned before, propagation of this plant is totally unnecessary as the plant takes care of that chore itself.

PLANTS WANTED

Arrojadoas — any species, *Cephalocereus leucostele* (Stephanocereus), *Lemaireocereus queretaroensis*, *Lemaireocereus montanus*, *Trichocereus pasacana*, *Pachycereus chrysomallus*.

Kindly quote prices to Mrs. Chas. J. Lewis, 201 Hazeltine, Millbrae, Calif.

CACTOPHILE'S VACATION

In two previous articles I have told about vacation trips Mrs. Kelsey and I have made in search of native cactus plants in the Northwest. Our first trip was to eastern Oregon, where we had heard there were "Button Cactus." These we found out of Madras, Oregon, and a specimen sent to Mr. W. Taylor Marshall was identified as the "Plains Cactus," *Pediocactus simpsonii*. Also, several varieties of *Opuntia* were brought home. A year later, we visited in central Washington and were rewarded with larger and darker spines specimens of the "Plains Cactus" north of Quincy, Washington, as well as more *Opuntias*.

This last summer we decided to see more cactus plants in other states, as well as new scenery. As we wished to photograph rather than dig the plants, our equipment included a 3 dimension "Viewmaster" camera, 35 mm Argus, Brownie kodak and a pair of binoculars. Our route was via Salt Lake, Bryce, Zion and the Grand Canyon. Anyone that has visited these knows it is impossible to do justice in a short stay, so with the Viewmaster and Argus loaded with color film, we have a lasting record. Some chollas at the Grand Canyon were the first cactus spotted.

From there we went south through Flagstaff, the "ghost town" Jerome and the famous Oak Creek Canyon with its many scenic spots. It was not until we saw our first "Joshua Tree" and Sahuaro that we realized we were really in "Sahuaroland."

As our vacation time was limited it was impossible to spend much time at the various points we visited, but there is one place, however, that we will never forget. This was, as the folks of the Southwest will readily guess, at Papago Park. To wander around on the various paths and see the different types of succulents growing naturally was a wonderful experience. With Mr. Marshall as our guide, calling attention to rare specimens, that we might otherwise have overlooked, was most instructive. Here my Viewmaster was especially practical. I had it hanging from one shoulder and the 35 mm from the other, like a pack mule. Even in the lath-house, in its partial shade, the results were better than expected. When we purchased Mr. Marshall's book, *Arizona Cactuses* he very kindly autographed it and his co-worker Mr. Earle signed the very descriptive guide book. Although it was quite warm (?) just 120° out in our car, we most assuredly enjoyed every minute of our stay.

While talking to Mr. Marshall, I remarked that I intended to try to get some native plants on this trip, ones representative of Arizona. Before we left he presented me with a fine specimen and had Mr. Earle box it so it would

carry safely. A sticker to the effect that it had been inspected was affixed, as we were coming home through California. But at Blythe, California, the inspector told us it would not pass as the label did not specify that it was free from "root rot." However, he kindly offered to mail it to me if I would address it. As this seemed to be the only thing I could do, I left it with him and prayed for the best. It came a few days after our arrival home.

In Pasadena, we visited briefly with Mr. Scott Haselton at the Journal's office. We had corresponded, but this was the first time to visit and had a very interesting chat. Then on to San Marino, to the Huntington Botanical Gardens, where we had heard were many gorgeous plants. Unknown to us, this place is closed on Mondays and were told to return the following day at 10 a.m. To tell the guard that we would be miles away by that time or that we had come a long distance, was of no avail. It was a real disappointment to only get a peek through the big iron fence.

We had one more thrill with a cactus plant we had not expected, when we visited at the home of Mr. and Mrs. Paul W. Jackson, at Santa Paula. It was dark when we arrived there, but found a giant *Cereus* in bloom. The plant was about 15 feet tall and it seemed there were about a hundred blossoms in various stages. Not to miss a chance to get a picture, we returned the next morning about 9 o'clock, and although a fog had come in during the night, it was still gorgeous. My "Viewmaster" camera very successfully recorded it and some Chollas beneath it, in 3D.

This trip certainly increased my desire to find some place either in California or Arizona, where I can leave my plants outdoors throughout the year. Here in Oregon it is a job to take several hundred plants, with a number of specimens over 6 feet tall, out in the spring and back into my 12 x 18 greenhouse in the fall. It reminds me of Mr. Nat May, when we visited at the Experimental Station, north of Penticton, Canada. When I asked him if the plants in the plot he calls "Death Valley" stayed out all winter, he replied, "In the fall, when I take them in, I don't know if I'm a 'uman bein' or a bloomin' pincushion."

JOHN R. KELSEY
Portland, Oregon.

CONVENTION OF 1955

As per instructions by the Delegates to the California Convention in 1953, and O.K.ed by the Board of Directors, I wrote to Mr. Leasure, asking him if he would accept the Local Chairmanship, also to Mr. Roberts of the El Paso Cactus Club asking them to be Hosts to the Convention to be held in El Paso, Texas.

Having received an affirmative answer in both cases. Also the El Paso Chamber of Commerce wrote they would be delighted to help out. We are all set for El Paso, Texas, in July, 1955.

Final details, arrangements, etc., will be forthcoming before that date. So save your pennies and on to Texas.

LOPHOPHORA WILLIAMSII

I have been asked by Mr. W. E. Naylor, who is Chief of the Narcotics Division, Dept. of Public Safety, P. O. Box 4087, Austin, Texas, to bring to the attention of all members of the Cactus Society that there is a law in Texas covering the plant that is commonly called the Peyote. This law makes it a violation for anyone to even have this plant in possession, let alone shipping or selling them.

There are many dealers listing this plant for sale

and Mr. Naylor informs me that his agents are going to have to prosecute anyone they find with the plants. And there are some dealers here who are under arrest at the present.

Mr. Naylor, however, understands that there is a good revenue from these plants to cacti dealers and feels that there should be something done about the present law. The use of these plants in this country as a narcotic is actually nonexistent. So he suggested I ask that as many dealers as possible care to write a letter of complaint to him at the above address and he in turn can take the matter up with higher authorities and have something done to amend the law.

If there is any way you can assist in this matter I am sure many members will benefit by it and will in turn be grateful to you for the assistance.

JESSE THOMSON, Texas



FIG. 9. Cluster of *Mammillaria parkinsonii*, Mezquititlan, Hidalgo.

MORE ABOUT MEXICO

By HOWARD E. GATES

Photos by E. YALE DAWSON

From Jalapa we rapidly ascended to Perote where we took a road through the pines at an elevation of seven or eight thousand feet, to Teziutlan, where we again began to descend to the Gulf of Mexico. We made our camp at four or five thousand feet in dense vegetation. The most remarkable plant of this area

was a great long leafed tree fern whose slender trunks occasionally rose to a height of twenty feet. We reached the shore near Nautla and followed close to the beach to the ferry at Tecolutla. Beyond the river mouth, we secured a fine full course luncheon in a high class resort hotel for the equivalent of a dollar

and a half. The saddest feature of it, was that we had an early breakfast in our mountain camp and had to wait until two-thirty in the afternoon for serving to begin. Mexican meal hours are usually much later than those we are accustomed to having. The coastal plain in this section was still narrower and with a rich vegetation. We found investigating the edge of a swamp quite interesting. There were Epiphyllums on the trees, vines and bromeliads. Most interesting was the flower on a glossy green, broad leaved plant that was neither vine nor shrub. The six- to eight-inch cream-colored buds stood up like candles. When they opened, the few petals recurved like a partially peeled banana and the intervening space was filled with an aigrette of very colorful stamens.

On our way inland we passed through rich agricultural districts. This is one of the places where certain species of climbing orchids are cultivated for the production of vanilla. Well into the hills we came upon Poso Rica, one of Mexico's rich oil fields where great flaming torches burned the surplus natural gas. Then we climbed still higher until we camped amongst the pines west of Huachinango. There I noted in my trip log; "Very interesting day's trip. Saw many bromeliads, orchids, epiphyllums and hylocereus but no other cactus."

The next day we wound through the highlands and mountains to the mining center of Pachuca in the State of Hidalgo. From there, we climbed the stiff grade over the mine tunnel honey combed ridge at Real del Monte and northward until we had left the good road far behind. On the upper slopes of a great canyon, we found heavy stands of *Lemaireocereus dumortieri*. These looked somewhat like *Pachycereus marginatus* except that the branches arose from a short trunk instead of from the base of the plant and they make many more branches. Both of these species will find resting places in other genera. The fruits of *P. dumortieri* are quite remarkable in that they are only about an inch in diameter, spineless and when full ripe the extremely mucilaginous, yellow pulp oozes out through a lateral crack in a manner similar to that of *Bergerocactus*.

However the lower slopes of the canyon were still more interesting on account of the thick stands of *Cephalocereus senilis*. These only grew on steep slopes in a peculiar whitish soil which may carry considerable gypsum. They grew to twenty-five feet high with upright branches growing from the base and closely paralleling the central branch. The branches were fluted with many ribs and bore short spines as well as hair. The upper parts of the branches were quite white but below the hair had weathered away or turned a dirty gray. Old plants nearly always bore small clusters of bromeliads on their sides. The unilateral cephaliums, composed of dense woolly mats, were near the tips of the branches. As in the case of *C. hoppenstedtii*, the cephaliums were extended upward a few inches annually and the lower part turned black. In contrast to *C. hoppenstedtii* which tapers a bit to the top, these carried full diameter until the crown rounded over. In fact there appears to be a bulge just above the cephaliums which slightly hoods them. At the time of our visit, the pink flowers about two inches long, were just beginning to poke their tips out from the woolly mass.

The bottom of this canyon is an old lake bed and the farms along the river carried the best stands of corn that we saw in Mexico. We made our camp beside a ditch full of water flowing under a row of immense pecan trees. Hedge rows were formed by *Pachycereus marginatus* which were in fruit. These followed the tubular pink blossoms which varied from

an inch and a half to two inches in length. The fruits were globular, red with red flesh and bore scattered clusters of vicious spines. The black seeds were large and comparatively few in number per fruit.

On the slopes along the road, we passed great colonies of gigantic *Echinocactus ingens* which were quite similar to the *E. grandis* we saw between Tehuacan and Zapotitlan. Three foot clusters of snowy white *Mammillaria parkinsonii* with their many heads looked like great round pans of biscuits. One of our botanical splitters that would like to make a new species for every millimeter of spine length, would have a field day here as the spines varied all the way from very short to two inches in length. The bright flesh colored flowers and scarlet fruits contrast well against the white spines. There were also numerous Agaves and Fouquierias.

Just outside of the village of Mezquititlan, we really hit the jack pot. Here on one hillside, were slender *Astrophytum ornatum* in all sizes up to four feet. We had heard of some tall ones but never any like these. Along with them were *Echinocactus*, *Coryphantha*, *Tbelocactus*, *Dolichothele* and of course the omnipresent *Opuntia*.

In my account we will take a big jump from this canyon to the area along the highway north of Ixmiquilpan enroute to Zimapán. Here we had to make many stops for photographing. There were immense old *Myrtillocactus geometrizans*, great clusters of *Mammillaria compressa*, *Coryphantha* and *Echinocerei* as well as fine single plants of *Ferocactus latispinus*. We found the *Mammillaria compressa* very variable, which accounts for the long list of specific and varietal names that Dr. Craig put under *M. compressa* in his *Mammillaria Hand-book*. I note that there is a steady stream of new species of Mammillarias being described from Mexico. Doubtless there are still some to be described, but it is likely that as in the past, many of these will prove to be mere variations of known species. It would be a life time project for some student just to work out the proper relationship of the many species in the genus *Mammillaria*. His task would be made much lighter, if the authors of new descriptions would abandon their haphazard assignment of the origin of a species simply to Mexico and give the name of a definite locality. Mexico is a big place. Even quite a bit bigger than our State of Texas, so to locate the origin of a small plant that is simply ascribed to Mexico is worse than looking for the needle in the haystack. Also if a person does not know enough about it to do more than assign a plant merely to Mexico, does he know enough about it to justify describing it?

One of the beauty spots on the road to Zimapán was the Tasquillo River gorge which is crossed by a fine steel and concrete bridge. There was a fine stand of *Lemaireocereus dumortieri* growing beside the river as it swung around the great cliffs.

From the pleasant small city of Zimapán, we began the long descent winding through the mountains to Tamazunchale known to most of the tourists phonetically as Thomas and Charlie. This portion of the journey was very scenic though not rich in cactus. Part way down there was a cluster of thatched roadside stands beside the road with an attractive water fall tumbling down through the forest behind it. These stands offered curios, bananas, soft drinks and especially vile cigars that must have been made for the tourist trade. On the counter at one of them was a pet coati mundi which was mischievous and playful. Dr. Dawson caught some beautiful large butterflies for his small daughter's collection.

(To be continued)



FIG. 10. *Aloe variegata* collected by G. W. Reynolds near Oudtshoorn and flowered in Johannesburg in August.

Plant of the Month - *Aloe variegata*

The Aloe in Nature and Cultivation

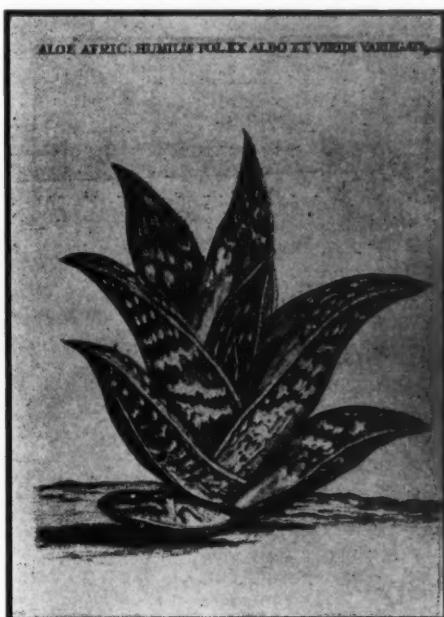
So. Afr. Hort. Jour. 1938

By G. W. REYNOLDS

The Aloe has for long been an object of interest and admiration in civilized countries, for there are records by ancient writers that the Aloe was cultivated in the days of Rome and Naples. Reliable and more detailed records however can only be said to have commenced in the latter part of the seventeenth century. One of the earliest works in which I have been able to find an illustration of an Aloe is "Muntingius Aloidarium, An History of Aloes," printed in Amsterdam in 1680, that is, 258 years ago. Of the 8 plants illustrated therein as Aloes, seven are not what we know as Aloes to-day, but are mostly American Agaves. The remaining one is an Aloe, and on account of its great interest I am reproducing a photograph taken of the page containing that illustration. It represents an Aloe then named *Aloe vera vulgaris*, and which in all probabilities is the plant known to-day as *Aloe vera* from the Barbados, Bolivia, Mexico, Cape Verde Islands, India and elsewhere. This inter-

esting figure is probably not the first known one of an Aloe, but it is certainly one of the very earliest.

In 1703 Commelin published his *Praeludia Botanica* in which 9 illustrations of Aloes were given. These include the Aloes known to-day as *A. commixta*, *A. ferox*, *A. brevifolia*, *A. glauca*, *A. humilis* and *A. variegata*. No flowers are shown and the text is in Latin only. Commelin also records that six of the species were raised in the Medical Gardens, Amsterdam, from seeds sent from the Cape of Good Hope in 1700 by the Governor, Wilhelm Adrian van der Stel. In this work also, plants had long Latin names. As an example, the stately *A. ferox* with its candelabra-like inflorescence of long red spikes, (so plentiful from Swellendam through the Eastern Province into the Transkei and East Griqualand) rejoiced in the name of "*Aloe africana caulescens foliis glaucis caulem amplectentibus latioribus et undiqueaque spinosis.*" (The stemmed African Aloe with grey leaves clasping the stem,



broader, and spiny on both sides.)

What is probably our most interesting and most sought after South African Aloe, *A. variegata*, was also illustrated by Commelin. I have photographed Commelin's figure of this Aloe, and reproduce it herein. As far as I can trace, this is the first published illustration of this unique Aloe. It was also one of the species raised in Amsterdam from seed sent by van der Stel in 1700. At that time its name was "*Aloe africana humilis foliis et albo et viridi variegatis*," (The humble African Aloe with white and green variegated leaves). The present name *A. variegata* was given to this plant by Linne in his *Species Plantarum* in 1753.

EDITOR'S NOTE: Dr. Reynold's monograph "The Aloes of South Africa" (1950) shows an interesting plant of *A. variegata* collected near Aus, South West Africa.

FIG. 11. The first published photograph of *Aloe variegata*. From Commelin's "Praeludia Botanica" Amsterdam, 1703.

Aloe ausana

By R. W. POINDEXTER

From this JOURNAL Vol. VI, No. 11, May, 1935

Among the small aloes, the choicest and most aristocratic is one which has recently appeared in our midst: *Aloe ausana*. There are several species of succulents in genera other than *Aloe* which also bear the name *ausana*. Judging from this, the town of Aus must be the center of a good collecting ground. It is in Namaqualand, in the southern section of Africa, in a mountain range about 50 miles inland from the west coast.

Aloe ausana, while obviously a close relative of *A. variegata*, has several points of superiority over that species. It is decidedly more compact and chunky; the leaves, which are very thick, are so short that they form equilateral triangles themselves in addition to forming a plant which is triangular. The ground color is darker, furnishing a more striking contrast to the white markings and the wider white marginal bands. Best of all, it is decidedly easier to grow and keep in prime condition. Its rate of growth is slow, but that is an advantage in a collector's plant. Although its flowers look like pink coral, this is one of the few Aloes that I prefer out of bloom. Its geometrical symmetry is ornament enough.

EDITOR'S NOTE: Evidently Dr. Poindexter's plant was from seeds sent to several dealers from Triebner about 1932.



FIG. 12. *Aloe ausana* in the Poindexter collection, 1935

The Spectacular Aloe - South African Charmer

By E. C. HUMMEL

From *Florist's Review*, Oct. 22, 1953

The popular *Aloe variegata* is commonly known as partridge breast, tiger aloe or banded aloe in this country. In the Southwest African land of the Namaquas, to which it is native, this plant is known as Kanniedood, which means "cannot die." The belief of the natives that this aloe may be hung bare-rooted for years and continue to live and even bloom is not far wrong. There is much more danger of killing this little plant with too much water and care than by neglect.

Most aloes are extremely sensitive to excessive moisture and must have an abundance of drainage, with a light, open soil. They do not like commercial fertilizers, as is common with most succulent plants.

A good method of re-establishing an aloe is to use an extremely small pot with straight peat moss, or 75 per cent peat and 25 per cent of some other medium such as charcoal, pumice, cinders, vermiculite or sand. The potting material should be damp but not wet. Do not soak the pot; syringe the plant, but do not water it

until it is well-established. Shift the plant to any soil suitable for geraniums, adding only drainage material.

The roots of aloes (aloes are usually shipped bare-rooted) are of little use, except to hold the plant in the pot until new roots are formed from the base. The presence of roots also lessens the danger of placing the plant too deeply in the soil; planting an aloe too deeply is almost sure to kill it.

G. W. Reynolds, author of the beautiful publication, "The Aloes of South Africa," a 500-page book containing hundreds of black-and-white reproductions and 77 color plates, has urged that aloe fanciers keep in mind that these plants grow on the ground, not in it. Mr. Reynolds was inspired to collect the data for his book after visiting the native habitat of the *Aloe variegata* to determine why he lost those plants which collectors had brought him for his garden. He discovered that he had been planting his aloes too deeply.

Certain aloe species have been known for

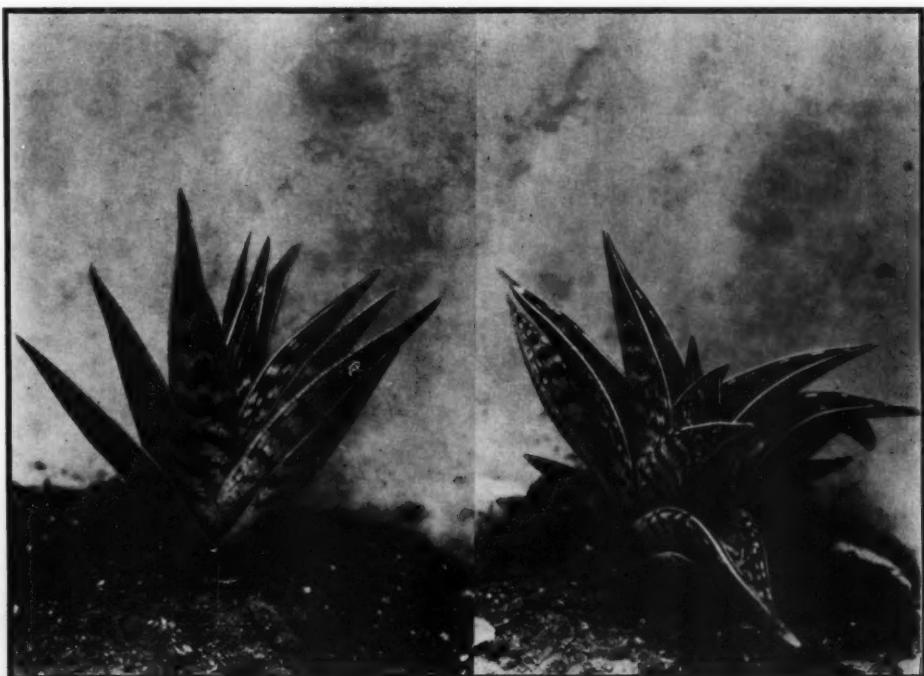


FIG. 13. (Left) *Aloe variegata*. (Right) Hummel's Improved form.

centuries for their medicinal qualities; others have been used as fiber for making fabric. Some aloes are valued for their pigment, particularly in the making of violet dyes.

Aloe variegata ausana is not a new plant, but

one whose popularity remains undisputed wherever a collection of succulent plants is assembled. It was introduced into Europe by seeds shortly after it was discovered in the 18th century and kept among the plant oddities of wealthy per-



FIG. 14. *Aloe variegata*. A one-shot, color-separation by Haselton of one of his pot-grown plants. Note elongated and curved flower-stems which are quite different from a field-grown plant.



FIG. 15. Hummel's Improved *A. ausana*.

sons. In the 1830's, with the introduction of cacti into Europe from the Americas for the first time, wealthy amateur gardeners formed fascinating collections of the xerophytic plants known at that time. Included in these collections were the strange cacti that jumped at the traveler as he crossed the deserts of North America; the thorny euphorbias from Africa, the juice of which was used by natives to poison their arrows, and hundreds of other rare plants. It is little wonder that the aloes were classified as cacti; many persons still consider them to be such.

In the 1930's *Aloe variegata* came to be among the succulents most in demand when, after a decline of several years, interest in them was intensified by the offerings of Harry Johnson, of Johnson's Cactus Gardens, through his beautifully illustrated catalog. At about the same time Howard Gates was supplying new kinds of plants and creating additional interest in cacti and succulents by his explorations of the Lower California regions.

During the same period, interest in the newer South African plants was increasing. From a German collector in the field, large quantities of collected plants were obtained by Hummel's Exotic Gardens, among which were some of the newly named *Aloe ausana* (now considered a variety of *Aloe variegata*).

One of these new plants was unusually attractive, of greater size and more beautifully marked than the rest. Hummel's Exotic Gardens decided to use this plant to improve the strain. As the plants are not self-fertilizing, it was necessary to use other plants from the same imported collection for parents. Few of the resulting seedlings showed the strong characteristics desired.

Some were extremely dark, with little variegation. A small number were possibly as good as the old type; a few showed promise of being what Hummel's was looking for.

Several years of selective breeding resulted in a plant of faster growth and greater hardiness, with more distinct markings. The bands of this improved type do not have the tendency to merge which results in greater contrast between the light and dark areas and a more even balance of the two tones. The white margin on the leaf is broader and more prominent.

This distinctive little plant is so unusual it would hardly be expected to have the added attraction of a flower. However, when the plant is grown in the field, bell-shaped pink blooms grow on spikes up to eight inches; when it is grown indoors, the length of the flower spike is even greater.

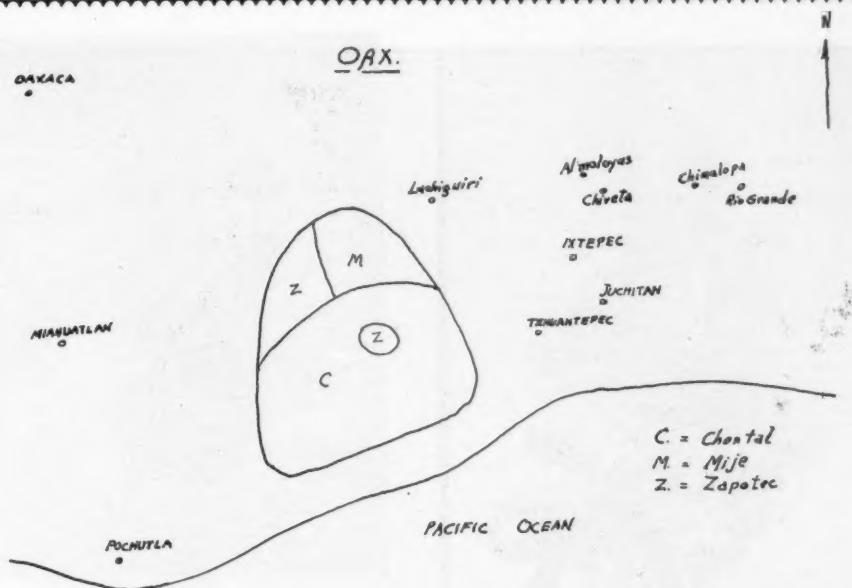
The *Aloe variegata* was so highly esteemed by Mr. Blanc, Philadelphia, in the late 1800's that he turned his hobby into a business by converting the upstairs of his home into a greenhouse, in order to supply the demand of the public during the first cactus craze in the United States.

Today, the industry ships more cacti and succulents from California alone, in an average week, than were moved in any year during the former collecting sprees. The majority of these plants go to plant lovers who are looking for the unusual; to decorators, who are looking for the fantastic, or to persons whose gardening days are a memory and who desire to possess plants that will not suffer to any extent if they are at times neglected.

With the demand for the unusual in plants greater than ever before, it is little wonder that *Aloe variegata ausana*, the charming little member of the lily family, is numbered among the most desirable of succulent plants because of the beauty of its individual specimens and its non-conformity to botanical descriptions.



FIG. 16. *A. variegata* makes a fine pot plant.



The Habitat Range of *Nyctocereus chontalensis* (with notes on that of some other species)

By T. MACDOUGALL

When *Nyctocereus chontalensis* Alex. was described, it had been found growing mainly in the territory inhabited by the Chontal Indians of Oaxaca, Mexico. Since then the writer has recorded the occurrence of this species in some additional areas, and now has a fairly complete knowledge of its range. The accompanying map is an attempt to delineate the known range, and also to divide this area into zones corresponding to the native inhabitants.

It will be noted that the Chontal area remains much more than half of the total, and thus continues to give aptness to the name *chontalensis*. The Chontal area includes territory pertaining to 23 towns (of a total 29), the Mije to 5, and the Zapotec to 8—although the last includes two towns, Nejapa and Tavela, which are Spanish-speaking only, and of mixed population.*

The altitude range of *Nyctocereus chontalensis* is 2000 to 6000 feet, although in only a few places does it come as low as 2000 feet.

A group of small towns—Almoloyas, Chivela and San Miguel Chimalapa, along with Río Grande, a *ranchería* of the latter—mark habitat records of *N. oaxacensis*. Almoloyas is the type locality. In this area *N. oaxacensis* has been found growing at altitudes varying from some 500 feet to a little over 1000 feet.

To the south of *Nyctocereus oaxacensis*, extending over the hot dry Pacific plains, and, in places, climbing up to more than 1000 feet

altitude, grows a many-spined species—yet to be described. This forms low sprawling plants, often with beautifully golden spines, particularly in the young stages. [One or two specimens, selected for color, are growing in the greenhouses of the New York Botanical Garden.] This golden-spined species connects with the ranges of *N. chontalensis* and *N. oaxacensis*—closely related to *N. oaxacensis*—but, so far as I have noted, it does not reach the altitude range of *N. chontalensis*.

Near the Zapotec town of Santiago Lachiguiri (see map), growing on the dry south side of a mountain, at 4000 feet altitude, is a colony of *Nyctocereus serpentinus*. It is the only spot in the wild in which the writer has encountered this well-known species, and thus little can be said as to its possible range.

*A week ago we were in an area south from a point on the Pan-American highway, half way between Oaxaca (city) and Tehuantepec. Our route paralleled one made nearly two years before and was slightly to the west of it. This trip showed the range of *Nyctocereus chontalensis* extended to two more (Zapotec) towns and pretty well fixes the limits, to the west. The southern and eastern boundaries are already fixed. Next month I am to accompany an anthropologist into the Mije country to the north. Will check for a possible extension of *N. chontalensis* range. I have interested myself in this problem partly because of the obvious compactness of *N. chontalensis* habitat range. Wherever the species is found it is abundant and easy to observe. T. M. D. Nov. 1, 1953



FIG. 17
Left: Single, semi-formal corsage. Right: Single, informal corsage.

Corsages from Succulents

Materials Used for Corsages:

Annealed wire called florist wire or stem wire in eighteen-inch lengths and in different gauges.

Parafilm called stemming tape in sixteen useful colors and in three-fourths or two-inch widths.

Substitute crepe paper for parafilm. Using the crepe paper for a finished stem or dipping crepe paper stem into melted or liquid parawax (paraffin). This will insure protection of clothing against moisture reaching crepe paper and color running off.

Number thirty-gauge stem wire.

Number twenty-six-gauge stem wire.

Green stemming tape.

Ribbon.

SUCCULENTS—CLUSTERS OR SINGLE LEAVES

NOTE: The weight of the cluster or single leaf determines the gauge of the wire. Always use as light gauge of wire as possible, so that the complete weight of corsage will be very light. Always try to conceal the wire between petals, leaves, or by covering with tape.

WIRING CLUSTERS

Take a number twenty-six stem wire and holding it in about the middle, bend it down over the back of your scissors, at any degree from point to handle, shaping a correct size wire pin resembling a hairpin. With your left hand, hold the succulent cluster between thumb and first finger. Cut stem off just below first

finger. Place wire pin across top of cluster and down each side of stem. Take another number twenty-six stem wire holding it in about the middle and straight up, slip it under thumb. With upper half, wind two or three times around stem above fingers down to end of stem, leaving all wires below end of stem straight. Do not twist stem wires, always leave them straight.

Now tear green stemming tape three-eighths to one-half inch wide strips. The desired thickness of stem determines the width of the tape. Do not cut strips off but tape stems from roll. Holding tape in left hand and the wired cluster in the right, wind tape two or three times around stem up close to cluster down to end of stem wires.

Or place wire across top of cluster and down each side of stem; take stemming tape and slip end under thumb holding it tight, wind tape up close to cluster around down to end of stem; break tape off and re-tape the whole stem. Or rewind stem with silver foil, gold foil, satin ribbon, or metallic ribbon. Always scotch tape the ends of metallic ribbon.

WIRING SINGLE LEAVES

Make a number twenty-six wire pin. Hold pin in left hand. Place Sedum or Kleinia leaf in between wire pin about one-third way up the leaf. Take a number thirty wire holding it about middle straight up. Slip it under thumb and wind two or three times around leaf just a little way below top of pin down



FIG. 18

Materials Used for Corsage: Stem wires—26 and 30 gauge, green stemming tape, succulent clusters and single leaves, florists' pin, silver ribbon.

to end of leaf leaving all wires below end of leaf straight. Holding tape in left hand and the wired leaf in right hand, wind tape just a little way above top of pin around leaf and down to end of stem wires.

Or make a number twenty-six wire pin. Hold pin in left hand, place Sedum or Kleinia leaf in between wire pin about one-third way up leaf and take stemming tape and slip end under thumb, holding it tight, wind tape just a little way above top of pin around down to end of leaf. Break tape off and retape the whole stem. Or by closely overlapping tape continue taping down to end of stem wires.

If leaf is very delicate and needs extra support place between two pins and tape the whole stem.

WIRING A SINGLE ECHEVERIA, CRASSULA OR DUDLEYA LEAF

Use same procedure as for wiring clusters of Sedum and Kleinia leaves or make a number twenty-six pin and about one-sixth of the way up the leaf run one end of pin through center of leaf. Pull down and press pin close to leaf. Then run a number thirty pin through center of leaf, half way between the top of number twenty-six pin and end of leaf. Press pin close to leaf. Take one end of number thirty pin and wind two or three times around leaf just a little way below the top of number twenty-six pin down to end of leaf stem. Break tape off and retape whole stem.

WIRING A SINGLE LARGE LEAF WITHOUT STEM

Make three number twenty-six wire pins. About one-sixth of the way up the leaf run one end of pin through center of leaf and pulling down press the pin close to leaf. Then place another pin about one-eighth of an inch to each side of center pin. Tape down stem wires. Do not twist stem wires, always leave them straight.

WIRING SPECIAL NOVELTIES

Place colored candy in center of a piece of cellophane paper. Bring paper down close around candy and twist half way around. Take number thirty wire, holding it about middle straight up, and slip it under

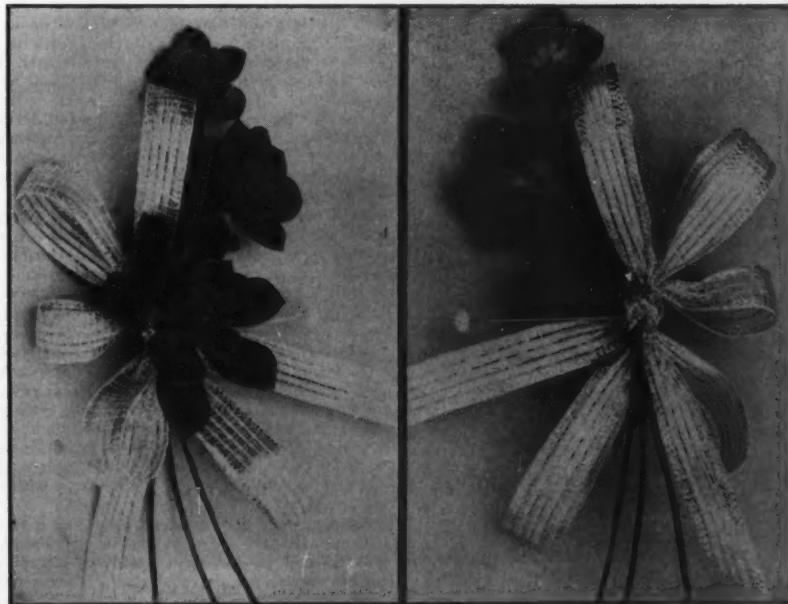


FIG. 19. Front and back views of single, informal corsage.

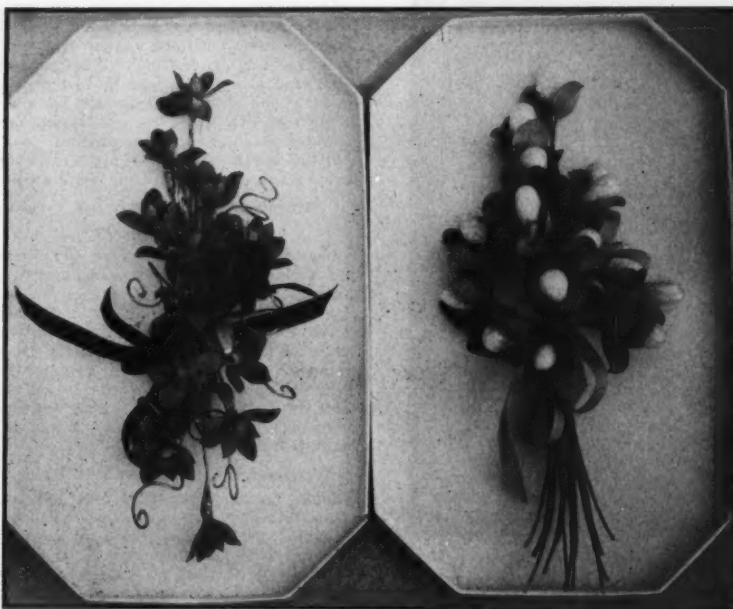


FIG. 20

Left: Formal double corsage. Right: Holiday or novelty corsage using colored candy, wrapped in cellophane.

thumb. Wind two or three times around bottom of candy above fingers and pull lightly. Cut cellophane off about one-eighth of inch below wire, making a short cellophane stem. Bend wire down each side of stem and twist two times around up close to end of stem. Tape around cellophane stem only. The results resemble a hair pin with candy ornament on top and may be used separately or with any of the preceding.

The corsage, bouquet, nosegay, colonial type bouquet, stiff mid-victorian bouquet, shower bouquet (brides'), sheaf of blossoms and leaves, and special novelties are all wired more or less by the preceding methods.

ASSEMBLING THE SINGLE CORSAGE

Holding a small wired bud, leaf or cluster in left hand, take number thirty or twenty-six wire for a tie wire in right hand. Wind it around stem once and pull tight about three inches down stem from bud. The desired size of corsage determines the number of inches between bud and tie wire. Place a medium size leaf or cluster just a little way below bud and wind tie wire around both stems once or twice and pull tight. Making sure the tie wire is good and tight, wind tie wire around the point of your scissors and pull. Now place the large cluster just a little way below the medium cluster. Wind tie wire around all three stems once or twice and pull tight. Cut off tie wire ends leaving about one-fourth of an inch. Bend ends down straight against stems. Tape over tie wire. Always wind tie wire in about the same place. Cut stems to pleasing lengths and leave straight or scroll the ends of stem wire for added decoration.

BOW FOR SINGLE CORSAGE

Use about one yard ribbon. For a unique and artistic bow, use chartreuse color ribbon. Hold ribbon in left hand between thumb and first finger, leaving about

three and one-half inches for end, make a two and one-half inch loop up over and down to thumb and first finger or center tie place. Always crush and turn ribbon just a little before slipping it under your thumb and make the same size loop down and up to center. Make a two-inch loop up over and down to center. Make same size loop down and up to center. Make a one and one-half inch loop up over and down to center.

Take a heavy sewing thread, wind it three times around bow above fingers. Place bow down and tie thread tight. Cut thread ends close at bow and the ribbon end two and one-half inches from center.

Take the extra piece of ribbon and place it on top of bow over thread and wind around bow once. Have both ends on top. Place bow on top of tie wire of corsage. Turn corsage face down and tie ribbon ends in one knot back of stems. Cut ribbon ends off to knot or leave ends on and arrange in with bow.

Blend ribbon and clusters by pulling loops in between wired clusters. Or take a number thirty wire, wind twice around bow above fingers and twist wire ends once close to bow. Wire to corsage without extra piece of ribbon or cut wire off and wind ribbon over tie wire and tie to corsage. Or take the extra piece of ribbon and wind around bow once and tie to corsage.

If bow is fastened together with thread or wire and wired or tied to corsage with the extra piece, the bow can very easily be removed and replaced without falling apart.

Fastening the two together and wiring it to corsage will not only save ribbon but will leave more ribbon to put into bow by making it fuller and larger. Always cut bow ends on a diagonal slant. Make a bow with either an even or odd number of loops. The bow with odd number of loops will appear most pleasing and artistic.

ASSEMBLING THE DOUBLE CORSAGE

Make two single corsages. Place one up and one down. Fasten together in center with tie wire. Tape wire and place bow on top of tie wire. Or place one wired cluster up and one down, filling in to center by following procedure for assembling single corsage.

SUGGESTIONS

It will help to have an understanding of line and color in assembling a corsage so that it can be worn for the shoulder, the neckline, muff, or large purse.

Ferns and extra foliage in corsages are passe and have been out of style for ten years.

Stems always placed down on all single corsages make the flowers last longer and stay fresher.

A corsage is worn on the right shoulder when dancing.

To keep corsage fresh for two weeks or longer, remove ribbon bow and by placing between single sprinkled newspaper sheets; lay on floor or cool place. Or sprinkle and place between sheets of waxed paper; lay on floor or cool place. Can be kept in ice box of 50° F., 80° humidity.

To take kinks out of new or used wire, draw over back of knife or piece of metal until straight.

To reuse wire and ribbon from old corsages, disarranged or take apart. Pull tape off, untwist wire, and take kinks out. Untie bow stem and press between cloth.

ELIZABETH H. GENRICH.

ARIZONA CACTI

FIG. 21. *Mammillaria heyderi* var. *macdougalii* may attain 8 inches in diameter. It is one of Arizona's most beautiful Pincushions with a ring of cream-colored flowers.

Photo from "Arizona Cactuses" by Marshall.

Naming Varieties of Cacti and Other Succulents

By H. M. BUTTERFIELD

Greater uniformity, accuracy, and fixity in the names given to cultivated varieties of plants has been sought for many years. Botanical names have been standardized fairly well under the recognized Botanical Code but horticulturists have not accepted any similar standard to govern the naming of the cultivated varieties,—at least to any important extent. Now with an *International Code of Nomenclature for Cultivated Plants* adopted by international organizations interested in the many problems involved, we may hope that wide acceptance will be made.

As early as 1930, an International Conference was held in London to draft a set of rules to govern the naming of cultivated varieties of plants. Some of the rules were good but others "entirely inadmissible," as stated in the *Manual of Cultivated Plants*. A review of the newly adopted rules, as published by the Royal Horticultural Society in London, 1953, would seem to show the new rules adopted are highly meritorious and worthy of acceptance in most cases. No doubt certain changes will be suggested from time to time and this was anticipated by those attending the conference in London in 1952. Needed changes can be made at the next international meeting. Perhaps a brief review of some of the rules adopted at the 1952 international conference will be of interest to readers.

Parts of a Plant Name.—There are normally three parts to a plant name; (a) first is the *genus* name, (b) second the name of the *species*, and (c) third the name of the *variety* or cultivated variety, known as the *cultivar*. A botanical variety is abbreviated as *var.* and a cultivar as *cv.* A botanical variety is written in italics and is usually found growing in the wild, whereas a cultivar is only propagated by a horticulturist as a rule. The name given the cultivar starts with a capital letter and the name is not written in italics. No longer is it legitimate to use a Latin name for a cultivar, although where a Latin name has been applied in the past, it may still be used but with the name written with single quotes. For example, suppose a cultivated variety had been named *eglan**tissima* in the past and the plant is not a true botanical variety but only a plant originated and propagated in the garden. The new rules call for listing this cultivar as 'eglan*tissima*' without writing the name in italics. The purpose is to clearly indicate that the plant in question is not a species or botanical variety and to use a name that will not lead to further confusion.

Registration of Names of Cultivated Plants.—

Perhaps the starting point in many cases will be to establish a system of registration of all names found in the literature for a given kind of cultivated plant. The several specialty plant societies have already made an excellent start in establishing a good system of registration, including such plants as orchids, dahlias, gladiolus, roses, camellias, begonias, and others. Once a good check list of given names has been assembled, it will be much easier to check for duplication and other similar details covered in the new Code of Nomenclature. Sooner or later there should be an International Register of Cultivar-names and with supplements and new editions issued from time to time. Any plant organization that has established a good system of registration may apply to be made the official registration authority who will decide which cultivar names are to be retained.

Translations, Commercial Synonyms, etc. The name of a cultivar must be written with the Roman alphabet and should remain unchanged when once so written. If the cultivar name has been in another alphabet, then the name may be translated by the official registration authority, or the authority may accept a name suggested. An individual should not attempt to establish a cultivar name independently of the official registration authority for to do so would mean more confusion. Any new or commercial name used in a catalog should be followed with an indication of the original name to avoid further confusion.

Formation of Cultivar-Names.—The cultivar name should start with a capital letter and the name should consist of not more than two words. The name should not be Latinized. Each cultivar name should be indicated by single quotes. As an example, the cultivar name of an echeveria might be *Echeveria 'William Baker'* or *Echeveria 'Callosa.'* In the last mentioned case, the Latinized name was applied several years ago but in the future, (after Jan. 1, 1954) Latinized cultivar-names should be avoided to help prevent confusion with species names.

In making up a cultivar-name, avoid using single letters or numbers. Do not attach Mr., Mrs., or Miss, and avoid articles, such as "The," unless the linguistic custom in a language demands this be retained, as in the case of 'La Rochette' but not 'The Colonel.' Do not abbreviate a part of a name, as Wm. for William, Mt. for Mountain, or St. for Saint.

Any name under consideration should be distinctive. Do not apply a name like 'Golden' but

rather such a name as 'Golden Emblem,' if this name has not been applied previously. Do not use the vernacular name of another genus, as *Begonia 'Calla'*.

Avoid the use of names of countries or states without a qualifying name. For example, do not call a variety 'California' but instead attach a qualifying name, as 'California Giant' or 'California Maid.'

Avoid the use of superlatives, such as *Crassula 'Earliest-of-All'* because some breeder may develop an earlier variety and then the name is misleading.

Avoid very long names. Avoid any name that may be confused with another name already accepted and registered, as 'Lightening' and 'Lightning.'

Growers of cacti and other succulents will need to closely observe the new Code rules on hybrid names. If the name is entirely Latinized for a genus, species, and botanical variety, then the rules of the Botanical Code apply and all such names should be published and described in Latin. On the other hand, if the given name is not Latinized, it should be written without italics, should start with a capital letter, and the name should be enclosed in single quotes. Such a name does not have to be described in Latin to be legitimate. Similarly, if the formula for the plant name is in Latin, then the name should have a Latin description but if the formula consists only of cultivar-names, then no such Latin description is required. For example, if a seedling *echeveria* has been obtained by crossing 'Dorothy Rucker' x 'Marjorie Pogue,' the formula does not have to be described in Latin. In another case, the breeder may cross *Echeveria gibbiflora* var. *metallica* cv. 'Carunculata' x *E. gigantea* and wonder how he should name superior seedlings from such a cross. Under the conditions the superior seedling could be given a cultivar name without making any new description in Latin, however the cultivar should be properly named in accordance with the International Code mentioned above and described in a dated publication of general distribution or registered by an organization accepted as official by the International Registration Authority. Usually an organization will not likely be accepted as official for registration purposes unless it agrees to abide by the Code and rules involved and is accessible to breeders interested in registration.

Names of Hybrids.—Many fanciers of cacti may be interested in hybrids between species and sometimes the hybridization may extend to first and second generation hybrids between species. The situation can become very complex, as in the case of orchids. If a stud book of crosses is available, as in the case of orchids, then the problem is much easier to handle. But imagine

what may happen where no record has been kept of parentage, as in many *epiphyllum* cacti. There it would be practically impossible to list any formula for the parentage. The new Code allows for cases where the parentage is unknown, seedlings being listed as 'ign,' an abbreviation for the Latin word, *ignota*, meaning unknown. The modern geneticist likes to know the formula for each parent plant because without such information he is working in the dark. It may be necessary to get along without adequate facts. In a few cases, we can write a name like (*Heliocephalus speciosus* x *Nopalxochia phyllanthoides*) *Jenkinsonii*. This formula may be significant where only one variety is involved. But suppose that with the same cross between species we obtain a good number of plants differing enough to justify naming. Already commercial growers largely forget about the original parentage and apply cultivar names running into the hundreds for unknown parentage. A definite cross may in time be designated by a Latinized name and the name would need to be described in Latin. Another treatment would be to refer to a particular cross under a breeder's name, as "Jone's hybrids," or as to the place of origin, as "Paramount Hybrids" referring specifically to the formula of species named. Then each distinct seedling to be named would receive a cultivar-name, just as now given to so many of the *epiphyllum* cacti listed. The word 'Grex' has been suggested to cover a collective group and may be written in various ways, such as (Paramount Grex) plus the given name of the cultivar. A more detailed formula would be helpful but where such is not available, the breeder may at least gather up as many facts as are available and list these under the Code. Reference may be made to *International Code of Nomenclature for Cultivated Plants*. William T. Stearn, Editor. The Royal Horticultural Society, London. 1953. Price 1/-—postage 3 d., for further details.

The reader may naturally ask what will happen in case he does not follow rules in the new International Code adopted in London in 1952. What will happen depends largely in how many organizations in authority accept the new rules as fair and reasonable. Rules and laws in general are no more effective than the backing behind them. But when large national and international plant societies have adopted the new Code rules and have also been designated as the official registration authority for the particular group of plants, the person who refuses to abide by the rules of the majority may find he no longer has control over the naming of his plants. It would seem to be preferable to co-operate with the majority and perhaps follow the rules in the Code for naming rather than to

have a name decreed not legitimate and replaced in the literature and even in catalogs of other growers, which might be the outcome. It is hoped that enough people will agree and accept the new Code, or its modifications, to make full cooperation desirable. Certainly we may again point out the need for *uniformity, accuracy, and fixity* in the names given for cultivated plants.



FIG. 22. (Above) Mrs. Abelardo has an interesting display of succulents growing in the Philippine Islands. (Below) Mr. Abelardo makes three dimension pictures utilizing small cacti.

FROM ENGLAND

From *Monthly Notes on "The Neale Collection" of Cacti and other Succulents.** ..

OBSERVATIONS ON THE "UNUSUAL"

In a collection of this size, there are bound to be many unusual and strange things happening among the plants which call for future study, these are very often of great interest and some defy all the normal explanations. It is about some of these things that I wish to devote most of the month's Notes as I feel sure that many a collector will find them interesting but what is even more important, he or she may find upon close inspection that one or more of the same kind of things exists nearer home!

FLOWER BUDS AND THEIR PROGRESS

Recent study of flower buds on some of the cacti, show a rather interesting series of stages in their growth or progress, and let me say at once that many a collector has noted this as is shown by talks with visitors who have had some years of experience in the hobby.

It is quite usual to note quite early in the year, many buds forming on your plants, then a period of standing still may be noted, followed by another increase in the size of the buds. Again they stand still and perhaps some die off by becoming dry, or so it may seem at a casual glance. Later on a flower or two may quite suddenly be found fully opened on a warm day.

First let me deal with those buds which failed to develop and died altogether; I used to think this was due to buds forming too early in the season, and the plant's inability to carry the number through to flowering size, but recent observation causes me to wonder if other happenings are more to blame, for instance; we are all very careful not to over-water early in the season, and if a dull spell of weather means missing the watering for longer than normal, some of the buds may fail through this cause alone, coupled perhaps with a sudden fall in temperature. I mention this simply as an example of a likely reason for failures of buds and NOT for those which take a long time to fully develop and about which I feel more study is needed.

The *Notocactus* is very much to the fore in this habit, I noticed it last year, promising myself to watch closely this year which I have done and I find many other true cacti fall into the same way of showing buds early, with a very long period of no sign of buds getting any larger.

On a small 'colony' of *Acanthocalycium violacea*, I have noted about three dozen or so buds, all the same size, these remained for several weeks and then quite suddenly 17 of them grew to flowering size in less than a week. After these had finished another batch of buds did exactly the same thing and others are just the same size as perhaps 6 weeks ago and yet quite firm and healthy.

So far as this year's observations on this aspect can be recorded, *Acanthocalycium*, *Notocactus*, some *Rebutias* in particular act very much in the same way, but to really study this, a number of the same plant is necessary to obtain the sequence of flowers on several plants at one time, which by-the-way is very necessary for seed production with those species which need the pollen from other plants and do not set seed from the pollen of flowers on the same plant.

*By subscription \$3.00 year which includes Neale's Photographic Plates.

Observations in an Arizona Garden

By WM. MASTRANGEL
Of Rocking Horse Cactus Gardens

The desert at this time of the year is in a very passive mood. While the Prickly Pears and a few other such plants are green, most of the plants in the desert are now in their drab browns and sandy colored tones. Although there will be few winter showers here in the southwestern desert, cacti for the most part, will remain very dried up and contracted. The pads of the Prickly Pear have a shrunken, wrinkled appearance; the Barrels and hardy Saguaros have contracted their ribs like an accordian. The cylindrical Opuntias such as—Desert Staghorn and others are of a dull color with a very skinny appearance. Even the little Fishhook Pincushions have contracted and lost some of their size in preparation for the winter. Of course, we cactophiles under-

stand that this is nature's way of protecting the cacti from winter frosts and keeping her plants in a sort of dormant stage of rest, which should always precede the spring flowering season. This is a good lesson for all amateur collectors to learn—keeping cactus plants very dry during the winter dormant season. September is the time to start lengthening the periods between watering until the middle of October or thereabouts, when the cactophile can water lightly the rest of the winter and early spring. This should be about once a month in dry situations and once every six weeks or so, in damper parts of our country. Generally, cacti that are in outside gardens, do not have to be watered at all from October to March, when the spring watering

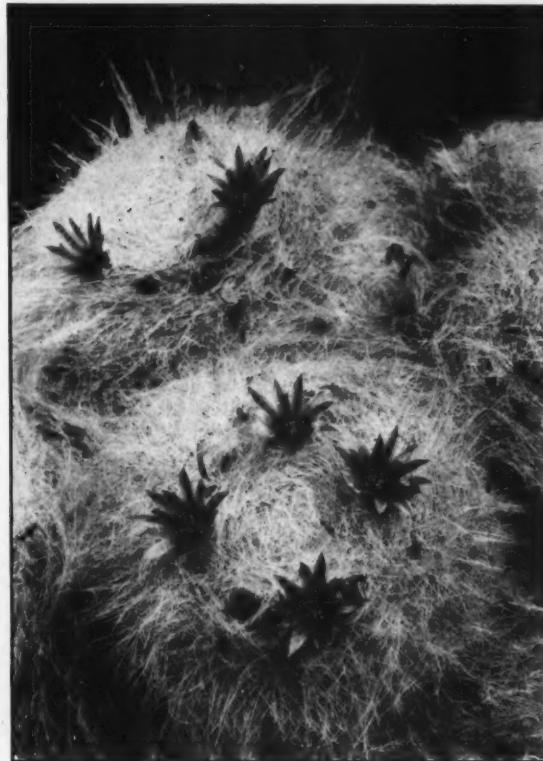


FIG. 23. *Mammillaria bahaniana* is one of the most desirable Mams. with its white hair and pink flowers. Photo from "Mammillaria Handbook" Craig.

period may then be started off in easy gradual stages.

In our garden, during December, we have a few plants in bloom: *Mam. elegans* (the Elegant Lady), *Mam. werdermanniana* (Snow on the Mountain) and *Mam. hahniana* (the Old Woman Cactus). We note that of these plants that are in bloom, the size is about 2½ inches to 3 inches. The smaller ones have not bloomed as yet. Of the thousands of cacti in our gardens, none look better this time of year than the hardy Pincushion; whereas the Hedgehogs, Barrels, Cerei, night bloomers, etc., have a general dull and slightly shrunken appearance during the winter season. Our plants are all grown in the lathouse and we water them only twice during the winter—once in November and once in January unless there happens to be a rain at such times. Our first spring watering here in Arizona, generally takes place sometime between February 15th to March 1st—it all depends on the weather. If it warms up early, we naturally start watering earlier. In the case of our African succulents, such as—Aloes, Euphorbias, etc.—well, they are getting regular watering periods at this time of year. Their lively colors brighten up our lathouse gardens. Here in Arizona, we always enjoy February in our lathouse, since that is the time when one of our most beautiful African Aloes comes into bloom. This is *Aloe variegata* (the Tiger Aloe or as it is sometimes called—the Partridge Breast). Our Tiger Aloe bed at that time, becomes one vivid mass of flame red color and it is a very beautiful sight to behold. One thing I like about our winter garden is the great change of color in some of our plants. *Opuntia santa rita* turns into a beautiful orchid-purple at this time and the large ears of *Opuntia phaeacantha*, the Purple Prickly Pear, turns to a deep rich royal purple. This change of color seems to come with the advent of dryness and cold. We have noticed in certain instances—where these same plants have been given regular watering throughout the winter—that their color hardly changed from the usual green. This winter color change is also noted among various other cacti and succulents such as *Ratbunia alamosensis*, *Myrtillocactus*, some of the Hedgehogs, certain night blooming cacti and others—if kept dry and cool. I also note that on the Purple Prickly Pears, the deepest color is on the southside of the ear. From this, I gather the sun has some bearing on this color change.

So, all in all, winter in the cactus gardens is not such a dull time at that—with all the color changes, the flowering Aloes and other succulents, etc.

(To be continued)



FIG. 24. *Kalanchoe blossfeldiana* from "Succulents for the Amateur."

EASY TO GROW INDOORS

KALANCHOES—pronounced Kal-an-ko'-es—are bright winter flowering succulents that fit right into the holiday scene. You will find them easy to grow and generous in their display of glowing color. Florist shops and nurseries carry them.

The thin tubular-shaped flowers spray out from the end of the stems to make airy clusters of bloom, like showers of brilliant sparks. The flower clusters are close together, stems are all much the same length, and the plant in bloom has a rounded form. On some varieties stems are five or six inches long, holding the flowers up and away from the foliage. Other varieties have short flower stems and blooms that make a rounded mass, covering the leaves.

The cupped and oblong succulent leaves are thick and have a medium green color that sets off the warm color of the flowers.

Kalanchoes require little water, take full sun or subdued light, and do well in a warm room. Be careful not to get the foliage wet; it will water-spot.

The plant is easy to propagate. You can grow it inside from seed planted in the fall and carry the seedlings on in flats until they are ready to pot. You can also start them from a small branch, cut off and inserted in a pot of damp sand. When the branch roots, pot it in a sandy loam. In mild-winter sections, you can grow them outside the year around.

These four varieties are among the best: Brilliant Star, fiery red, large flowers; Ernst Thiede, a free-flowering red, dwarf and compact; Yellow Darling, bright yellow flowers, low growing; *K. globulifera coccinea* (also known as *K. blossfeldiana*), scarlet flowers to 12 inches tall.

(From *Sunset Magazine*)

SUCCULENTS FOR THE AMATEUR—J. R. Brown—\$3.65

GLOSSARY OF SUCCULENT PLANT TERMS—

Marshall and Woods—\$3.65

Abbey Garden Press, 132 W. Union St., Pasadena, Calif.

THE SHARP POINT

By LEON KELSO

From *Biological Leaflet* No. 49

In the vegetable world.—Two writers alluded to previously in Leaflet No. 42 (Stone, G. E., *Botanical Gazette* 48: 359-379, 1909, and Lemstrom, S. *Electricity in Agriculture and Horticulture*, 1904), one a botanist, the other a physicist, have suggested that gland-tipped teeth, awns and spines, characteristic of many plants, functions as points for slow electrical discharge into the air. Only as a reminder need it be stated that electrical charges accumulate and discharge more readily on sharp points. The latter being merely surfaces of very high curvature, the charge density becomes high locally, producing a comparatively large potential gradient just off the surface.

In humid areas ready discharge via transpiration through the plant stomata is feasible due to abundance of moisture. In desert areas where transpiration must be at a minimum, what structure could serve for electrical exchange, assuming such a process is necessary, better than sharply acuminate surfaces? And with what structure are desert and semi desert plants most generally equipped?

Not only cacti but such widespread genera as *Gilia*, and *Salvia*, and many others are represented in our southwest desert areas in species characterized by spines, spinose tipped or lobed leaves, a multitude of hairs, or gland tipped hairs or all four. Note for example the euphorbiaceous Turkey Mullein, *Eremocarpus setigerus*, whose surface is a mass of spinose, branched and scaly hairs, and such desert grasses as *Pappophorum*, *Blepharidachne*, and *Cottea*.

In the bird world.—Is an electrical exchange, making a complete circuit with the atmosphere, necessary in non-aquatic animals? If such should be the case consider the bird, whose skin has no glands for transpiration of electricity via moisture molecules, and whose rate of metabolism is high, with a temperature maintained at over 100 degrees F. The chief character of Class Aves, the feather, subdividing from shaft to barbs, barbules and (in some forms) barbicels, presents a greater multitude of sharp points to the atmosphere than any structure in nature. Furthermore, the feathery structure occurs in the antennae of many nocturnal moths, in the stigmas and on the seeds of many plants. Plumose hairs occur on many Hymenopterous insects, their function so far being in dispute. Could the basic dynamics and function be the discharge of electrical ions or energy to the atmosphere?

It is noteworthy that nocturnal bird species, whether Owls, Goatsuckers, Nighthawks, Night Herons, or the Owl Parrot, have comparatively long, downy, and loose, though not denser, plumage, while diurnal species have shorter and comparatively dense plumage. The former group are active in a situation of lower atmospheric ionization, while the latter operate in conditions of higher ionization.

Noting the way birds preen, pinching and working at the bases of the feathers and stripping outward, it would seem that a film may be spread outward from the feathers insertion over its surface, in addition to the oil-gland substance. This would provide a medium whereby electrical charge could travel and whereby electrical and chemical effects of radiation could spread by molecular diffusion back into the skin of the bird.

In Leaflet No. 20 evidence was found that a negative charge is present on the feather tips of the flying pigeon. Using a charged 600 volt, 4 microfarad condenser (Cornell-Dubilier TJU 6040-G, in this case),

suspending feather tips (of pigeon, Goshawk, or Screech Owl) from its posts by 5 cm. lengths of rayon thread, repeating the procedure every month of the year, it is found that electrical charges spread very readily through the feather. The charge is less strongly maintained in the owl feather than in the others. Surrounding the suspended feather tips with humid air has little weakening effect on the charge. Placing low or medium grade radioactive Carnotite ore in an open top jar surrounding the suspended feather has a marked effect, dissipating the charge faster than it can be replenished via the thread from the condenser.

If birds can feel this problematic discharge via the feathers they have an additional means to sense the presence of films on their feathers whether developed there naturally or placed there by themselves in "anting" or preening, whatever functions these activities can serve, and also a means to sense the electrical condition of the atmosphere.

Washington, D. C.

THERMODYNAMICS OF THE DESERT SPINE

From *Biological Leaflet* No. 54

Issued January 25, 1951

For some decades ecology has dominated western American field biology, it being thought that the relation of life to environment is as much needed as the study of morphology or classification. That this is important has been little questioned but the real significance of certain features or habits to the environmental setting has not always been clear. For example, intensive research to show the effectiveness of dense pubescence as a preventive to water loss in arid country plants has not shown that it has such an effect.

One needs to consider not some but all the environmental factors concerned.

The thorn and spine armor of plants have long been a focal point of popular interest. It was said that they protect their possessors from ravages of grazing animals. Correlating their occurrence with arid habitat, it was said that cacti could not afford leaves because they would transpire too much water and therefore a reduction of leaves to spines is necessary for the plant to survive.

It was further noted that the more arid the habitat the greater the development of spine on cacti, and beyond certain degrees of dryness nearly every shrubby desert plant is more or less spiny or hispid, hairy or glandular or all four, whatever its family origin.

In a preceding leaflet (No. 49) attention was called to the function of sharp points, surfaces of abrupt curvature, as discharge points, or points of energy exchange with the surrounding air. The following factors would seem worthy of consideration.

1. In nature, corresponding with a cline or gradient in one feature of the physical world, other gradients will occur. With an electrical potential gradient, for example, in a substance, there will be a heat gradient and vice versa.

2. In the case of spines another function is in need of study, its role as a part of a thermodynamic machine. A problem of the desert plant is the exchange of heat energy with the surroundings. The little inhibited radiation from the sun, plus that reflected from the desert sands makes possible the building up in the plant a temperature higher than that of the surrounding air.

3. The cactus spine is usually a tapering structure. A controlling factor in heat conductance is thickness of material. Woody substance is not as heat conductive as metal but is more so than air. It was long ago found that wood conducts heat 2-3 times more rapidly lengthwise the grain than crosswise (Tyndall, Philos. Mag. 4th Ser., Vols. V and VI). Desert plants cannot survive by evaporative cooling alone due to lack of moisture to yield to the air.

4. All objects are in a process of radiation energy exchange with their surroundings and for thermic and chemical equilibrium to be achieved the outgoing energy must be in proportion to the incoming.

5. The spine or bristle presents more surface to the air molecules in proportion to its bulk than does the flat side of a stem or leaf, thus tending to stay as cool as the surrounding air. A cooler structure cannot lose energy to a warmer substance, therefore the contrary must ensue. After sunset the yielding of energy through the spines tends to cool the plant body to a temperature lower than that of the surrounding air, causing condensation thereon of any moisture that might occur in the atmosphere and also causing a flow of energy from the ground upward into the plant. The electronic-heat gradient provided by the spine tends to draw growth material toward its base, since electrical fields are fundamental phenomena in vegetable growth.

6. In short, it would appear that, from the physical standpoint, the spine should provide a surface, thickness, temperature, and electric gradient helping the plant maintain physical equilibrium with the desert radiational environment.

Further consideration may be given to the usual radiation energy exchange between the object and its environment. In regard to the Stefan-Boltzmann law, that the energy emissive power of a black-body substance is in proportion to the fourth power of its absolute temperature, it is to be noted that all parts of an organism's surface will not have the same absolute temperature due to differences in chemical composition, surface, shape and color. The tapering spine or hair, being more exposed to kinetic action of air molecules, less absorptive but more reflective of the rays of the sun, will have a different absolute temperature, and a different energy and electric potential than the rest of the plant. This would be offset if the air were humid but desert plain air is not, so the different electrical charge is not carried away.

There is the following experimental proof. If a bottle with a lengthy tapering neck (such as a pop bottle) be filled with water having a colored chemical precipitate, such as results from color toning photographic prints, blue or red Edwall, is shaken and laid on its side, the settling deposit evenly over the groundward side. Later, in two or three days the deposit will rearrange in an unbalanced pattern, depending on the color of the background and direction and quality of light, with concentration in the wide or basal part of the bottle, indicating the radiation relationships of the narrowing part are different from the rest of the body. Another point is that cacti can be kept alive for a time, if not indefinitely, by an occasional water vapor bath, no water being given the roots.

Radiation relationships could be considered in other matters. One should not disturb the belief that the universal whiteness of under coloring of aquatic birds is for the purpose of signaling to their distant fellows, but, if their underparts were black they would lose much more energy to the waterward side of their environment when swimming due to the much greater heat emissiveness of darker colors.

Pseudolobivia kermesina Krainz



Photo by Krainz

FIG. 25. The first red-flowered *Pseudolobivia*. A new species described in "Neue und seltene Sukkulanten," 1947. The flowers are 5½ inches long and 2¾ inches in diameter; they always appear near the crown.



Photo by Bosshard

FIG. 26. Four-year-old seedlings have characteristic reddish brown spines.

REFERENCE BOOK

"Arizona Flora" by Thomas H. Kearney, Robert H. Peebles, and collaborations; 1032 pages, \$7.50.

Nearly every life form found among North American flowering plants is represented in Arizona. This amazing diversity is partly explained by the fact that the altitudinal range extends from a few feet above sea level to approximately 12,600 feet at the summit of the San Francisco Peaks. The life zones range from Arctic-Alpine on these peaks to Lower Sonoran in the southwest and Subtropical in the extreme south.

The main object of this book is to provide means for identifying the approximately 3,370 species of flowering plants, ferns, and fern-allies growing without cultivation in Arizona.

Keys for identification of the families, genera, and species are provided. Under each species the authors give the geographical distribution within and outside Arizona, and usually the altitudinal range and time of flowering. They describe economic uses, toxic or other properties, and ornamental value of many plants, giving particular attention to the utilization of native plants by the large Indian population of the state.

Introductory chapters describe the topography, geology, soils, and climate of Arizona, the several types of vegetation in relation to the physical conditions, and the proportional representation of the larger plant families. There is also a brief account of botanical explorations in Arizona since 1832.

This is the only available work on the flora of Arizona that includes the results of intensive, botanical research in the state during the past ten years. It is based on an earlier publication, *Flowering Plants and Ferns of Arizona*, issued by the U. S. Department of Agriculture in 1942 and now out of print.

Both authors have studied the flora and collected plant specimens in Arizona for a period of twenty-five years. They have examined thousands of specimens in large herbaria and in botanical collections made at the University of Arizona and at state colleges. They have had the assistance of twenty-four other botanists, who have contributed treatments of special groups.

Dr. Kearney retired from the Bureau of Plant Industry after having served nearly fifty years in the U. S. Department of Agriculture. He was awarded the degree of LL.D. by the University of Arizona for his work in the genetics and breeding of long-staple cotton in the southwestern United States. Mr. Peebles has been associated with the Bureau of Plant Industry for the past thirty years, and is at present Senior Agronomist and Superintendent at the U. S. Field Station, Sacaton, Arizona.

FROM MASSACHUSETTS

Here in Hingham, Mass., an occasional dime store displays cacti in their windows, but I have only one friend who gets enthusiastic but not to the point of studying or buying literature. So all my contacts with others like myself are through the JOURNAL. It is time I went to Carter's Nursery, in Tewksbury, for an annual call, but 12 inches of snow and zero weather are at the moment discouraging.

Would it be possible to include an article every month for lowbrows like us on window gardening? I refer to those who are not blessed with a greenhouse in climates requiring housing of plants in winter; there must be a large number. John Rodgers of Ohio did this type of column and that is what I re-read. If the JOURNAL included the study of one popular (or should be popular) species in every issue, whether cactus or succulent, and always keep the window gardener in mind, maybe we could create the enthusiasm in this country that seems to exist in England. There must be among your members those who are capable of just this type of popular articles.

As I write, I admire an old *Aloe variegata* of mine which has two flower stalks nearly 3 feet high—blooming in flamingo and gray against blue-violet snow shadows and sunny snow drifts outside the window—it is quite a picture.

ELIZABETH SWAIN
4 Leavitt Street Hingham, Mass.

NOTE ON DUDLEYA

I was pleased to see *Dudleya abramsii* noted and figured in the Cactus Journal in the last issue. Years ago this (I am sure) was described as *Cotyledon orpetii* by Eric Walther.

The story is that Ed Howard found a plant down south, brought me plants, described as the Littlest Succulent. The color was almost gold-like. Am glad there is an authentic name. Several botanists have written me about the plant and its name which is now a "nomen nudum."

EDWARD O. ORPET

OKLAHOMA CACTUS SOCIETY

Officers for 1954 are:

J. L. Lawton, President
Mrs. Fred Heinen, Vice-President
Mrs. James H. Hyde, Secretary-Treasurer

Signed, MRS. WINNIE E. JONES

EDITOR'S NOTE: Mrs. Jones is one of the many loyal Society Members who has supported the JOURNAL all these years. She says, "This is my last duty as Secretary in sending in our renewal for 1954. I have enjoyed the JOURNAL for 25 years; as I am now 72 I don't expect too many of the next 25 year's Journals but I hope it has a fine future and good workers to carry on."

"ALOES OF SOUTH AFRICA" REDUCED TO \$11.50

Because of the large sale in the USA the publishers in South Africa have allowed us as a liberal discount that we can pass on to purchasers. The monograph of 650 pages is one of the finest botanical books ever published and contains 572 illustrations and 75 beautiful color plates of Aloes in their natural habitat. Order a copy while it is still available; it will be a good investment in years to come. Copies will be mailed direct to you from South Africa for \$11.50 postpaid or from stock in Pasadena plus 35c postage, foreign 60c. Sales in California please add 3% sales tax.

ABBEY GARDEN PRESS

132 West Union Street

Pasadena 1, California

FROM THE PRESIDENT'S DESK

With the arrival of a new year and the start of a term for a new President of the Society, it has suddenly dawned upon me that I have assumed a really man-sized job for the coming year and I most humbly hope that I am big enough to handle the job.

I assume office, not with any glowing hopes that I will be able to set the world on fire, but only with the sincere desire to do everything possible to advance the Society and to make it even more the International Heart of our great hobby that it should be.

The Officers and members of the Executive Board realize quite well that the goodwill and continued support of all our members are very necessary to the continuance of the Society and that any growth which the Society may make will come directly through our own efforts and those of all the members.

As you no doubt read in the November-December JOURNAL, the Society has started a concerted drive for new members and are depending upon its present membership to do all they can to secure these new members and thus help the Society and also win some of these fine plant prizes offered in this contest.

The contest will run until January 1st, 1955, and the winners will be announced in the January-February JOURNAL, 1955.

Always remember that when you secure a new member for your Society, you are doing the most important job you can do to keep the Society alive and strong. How about each one of you securing at least one new member for the Society during this month? Send the new subscriptions and the money to the Society Secretary, Ethel Rush, 820 W. 115th St., Los Angeles 44, California.

To each member of the Affiliates of the Society and to all members who are not a member of an Affiliate, the Society makes this direct offer of help, if you have any problems with your plants which need solution or if you feel that we can help you in any way with your plants, please let us know and we will do all we can to help you.

The Society always stands ready and willing to help the Affiliates in any way possible and we hope the members of the several Affiliates will realize this and write, either to the Corresponding Secretary, Mary Glade, 7600 Verdugo Crestline Dr., Tujunga, Calif., or to me, Homer Rush, 820 W. 115th St., Los Angeles 44, Calif., and make known your problems.

At the recent Convention, the Delegates from some of the Affiliates brought forth some very constructive suggestions for the betterment of the relations between the Society and the Affiliates and some of these suggestions will be in effect soon. Why does not your Affiliate send Delegates to the next Convention to present the views of your Affiliate to the meeting of the Delegates?

To those of you who have taken the time and the trouble to write in your suggestions in answers to the Questionnaire, published in the November-December issue of the JOURNAL, our sincere thanks. To the rest of you, we again direct the request that you take the time to let us know what you really think about the questions asked and do it soon so we can try to work out plans for the benefit of all the members. We have received a good number of very good and probably quite workable suggestions and many expressions of satisfaction with the way the Society is conducted but we would like to hear from many more than have yet written.

I have rambled along for quite a spell now and probably some of you wish I would stop, but there is so much that can be done and so few willing to do it that I guess I am hoping for some help from unexpected sources among the membership. Will you offer to help?

This is *your* Society and it is up to *you* to support it and to give to your Officers and Executive Board all the help possible in order to build a bigger and better Society.

HOMER RUSH, President

FROM IDAHO

My cacti number 101. I add new ones from Johnson's Cactus Gardens, local nurseries and 10c stores. Winter is not the time to begin new plants, I know, but this year I have managed to root these offsets: 5 *Mam. bocasana*, 2 *Mam. fragilis*, 3 *Mam. elongata*, 2 *Cleistocactus*?, and 1 *Notocactus*?. I use cleaned tuna fish cans, one-half full of dampened, sifted sand and just set the offsets on it, after their cut surface has calloused over for four or five days. The taller ones like the *Cleistocactus* and *Mam. elongata*. I held upright with four sharpened sticks stuck into the sand beside them. Now I am trying to root some Epiphyllum cuttings which were given to me. My "nursery" is lined on a wide window sill over my kitchen sink, that way I never neglect to water them when the sand begins to dry out, as they are always "right under my nose." I am a new member in the Society, starting on my second year of the JOURNAL which I enjoy very much. I would like to correspond and trade cacti with other cactophiles.

MRS. J. L. VANONETTI
N. Idaho Indian Agency
Lapwai, Idaho.

THE PHILADELPHIA CACTUS AND SUCCULENT SOCIETY
PROGRAM 1953-54

Meeting Place: Morris Arboretum, Gates Hall,
9414 Meadowbrook Avenue,
Chestnut Hill, Pennsylvania.

FEBRUARY 14, 1954—2:00 p.m.

Topic: Succulents other than Cacti.

Speaker: Mrs. Arthur P. Fenton, Jr.

Exhibits: Bring flowering Cactus and/or Succulents.

Also seedlings grown yourself.

Plant of the Month: Bring your most unusual Succulent.

APRIL 11, 1954—2:00 p.m.

Topic: Mammillarias.

Speaker: Mrs. H. E. Anderson.

Exhibits: Bring flowering Cacti and/or Succulents.

Plant of the Month: Bring your three best Mammillarias.

JUNE 13, 1954—12:30 p.m.

Picnic—box lunch. (Note time.)

Topic: Auction Sale.

Exhibits: Bring flowering Cacti and/or Succulents.

Plant of the Month: Bring your best Gymnocalycium.

NOTICE TO AFFILIATES

Are you looking for program material? There are now four sets of 100—35 mm. colored slides available to affiliates.

Set No. 1—California Cacti.

Set No. 2—Baja, South America and Mexican plants.

Set No. 3—Orchid Cacti and Miscellaneous succulents.

Set No. 4—Orchid Cacti.

Set No. 4 was donated to us by Mr. and Mrs. S. E. Beahm of Beahm's Epiphyllum Gardens, Pasadena, California.

Any affiliate interested in borrowing any one set at a time may do so by sending me a \$5.00 deposit.

MARY GLADE, Corresponding Sec'y.

7600 Verdugo Crestline Dr.

Tujunga, California



SPINE CHATS

LADISLAUS CUTAK



An English cactophile is concentrating on creating something unique: a Cactus Family Album complete, showing every genus by illustrations and descriptions, and as many species and varieties as possible. In order to accomplish this he has purchased several books in duplicate, like Marshall & Bock's *Cactaceae*, Brav's *Las Cactaceas de Mexico*, and others, and cut them up just for the pictures to be used for this project. It will take a long time and lots of pictures to complete it but if any of our readers wish to help this man it will be greatly appreciated.

Alph. L. Busschaert, a mechanical engineer by profession but now retired, got possession of his first cactus when a friend presented him with one about 35 years ago. It was a columnar type dug up along the Panama Canal. Unfortunately it did not survive, but it started his collection which grew to over 250 different species by the end of 1939. He took great pride in a number of genera because they were very seldom seen in English collections. With World War II coming up, difficulty arose in maintaining the collection and as a result many plants died. After the war's termination heating and other problems still had to be solved, so Busschaert decided to part with the remainder of his plants and distributed them among Society members.

Stamp collecting used to be one of his chief hobbies in earlier days and at one time his collection numbered 22,000 stamps that were sold in 1945 in order to commence his album of the "Cactus Family." He states that it is more difficult to obtain cactus pictures than stamps. In stamp collecting, one has only to enter a dealer's office, inspect and sort out what stamps are desired, pay for them and add to the collection, but not so with cactus pictures. Apart from buying cactus books and taking out the pictures, one has to rely mostly on the goodwill and kindness of friends.

Since it would be too big a job to make a list of the illustrations required, one has only to send good photos or clear pictures of no further use, and no doubt some of them will be useful either as new pages or as replacements to others where the illustrations are not so good. Pictures about 2 x 3 and up to 3 x 4 inches are most suitable for making up double pages. Larger prints make single pages. Thus if any of you readers have photos, catalogs, pamphlets of no further use to you and would like to help out Mr. Busschaert, write to me and I'll give you his address. Remember, only cactus species and varieties are desired; no hybrids.

Guillermo Ramos Nuñez, Hernando Lora M. and Gerhard Naundorf have investigated the stimulant action of *Euphorbia lancingolia* with three cows in the period of 14 days, administering them daily 50 grams of the drug-plant as an water extract (10% sugar). This drug plant is known as a galactagogous (milk promoter). The drug prevented the decrease natural of the milk production and increased the quantity of milk during the 14 days treatment with a per cent of 3.6 to 34.1. The chemists were to continue experiments with many more cows and if satisfaction continued would begin isolating the active principle. This spurge grows in Central America and is reported to be used by the Guatemalan women to induce a greater flow of milk. It is being grown in our collection at the Missouri Botanical Garden. The investigation was

written up in *Notas Agronomicas*, technical publication of the Agricultural Experiment Station of Palmira, Colombia, Nov.-Dec. 1950.

* * *

Chromosome studies promise to be helpful in the taxonomy of the Crassulaceae, as good generic characters in this family are scarce and generic boundaries often indistinct. Preliminary cytological studies (1945) supported the view that *Dudleya*, *Stylophyllum* and *Hasseanthus* are related. Considerable more cytological data and other information seem further to clarify the picture at present. Dr. Reid Moran keeps *Hasseanthus* as a genus, but combines *Stylophyllum* with *Dudleya* and this treatment is followed in his latest work, co-authored with Charles H. Uhl in the *American Journal of Botany* (40: 492-502, July, 1953). Chromosome counts are reported for 340 collections representing all but two of perhaps 55 taxa in *Dudleya* and *Hasseanthus*. In the article, the authors recommend that *Hasseanthus* be included in *Dudleya* and that *Dudleya* be kept separate from *Echeveria* as morphological, cytological and genetic evidence suggests that *Dudleya* and *Hasseanthus* are more closely related to each other than *Dudleya* is to *Echeveria* or *Hasseanthus* is to *Sedum*, of which they are segregates. It would appear that if *Dudleya* is included in *Echeveria*, *Hasseanthus* must also be placed there, or if *Hasseanthus* is included in *Sedum*, *Dudleya* must be included in *Sedum*.

* * *

The Administration Report of the Director of Agriculture in Ceylon states that the cactus collection at the Royal Botanic Gardens, Peradeniya, has expanded considerably since last year when a beginning was made with only 10 species. Since then, over 150 new species were introduced from Spain, Turkey, Portugal and Germany. The question of accommodating these in a specially built glasshouse with the necessary dry and arid conditions has now arisen.

* * *

A daughter of a pioneer family once told Clara C. Bangs, writing in *Gardening Magazine* (May, 1942) that *Opuntia* was grown in every yard to be handy when needed, as it was used for a poultice on infected wounds on both persons and animals. To prepare a pad for use, the spines were removed and the leaf-like joint split open, making two large flat poultices to be applied cut-side down, directly on the wound. Its mucilaginous juice was very soothing and drew out the infection. Repeated as often as necessary. Being so far from medical assistance and having so little, there is no room to doubt that the old time families used it. They had to make use of what they had.

CEREUPLY SPEAKING

Somehow we missed this installment of John H. Rodger's column. Many of our readers will be concerned about its continuation. The best way to assure it as a regular feature in 1954 is to write Mr. Rodgers, 1229 W. 8th Street, Lorain, Ohio, and tell him what subject matter you would like the most. We think the greatest need is information for the window sill grower and secondly, the collectors having small glasshouses. What do you think? We are sure that John will be glad to carry on with his helpful column.

FROM MEXICO

My 1953 Cactus Price List of rare plants is still valid through 1954. Just ask for a copy if you do not have one.

F. SCHWARZ

Apartado 347 San Luis Potosi S.L.P. Mexico

THIS MONTH'S SPECIAL

Echinocereus triglochidiatus, large specimens \$2.00 ea.
Coryphantha vivipara..... 50 ea.
Homalocephala texensis, large specimens... 1.00 ea.
Opuntia stanleyi, 25 cents each,
 large specimens..... 1.00 ea.

All specials F.O.B.

Write us your needs

BLAKE NURSERY

Rt. 4, Box 183—Albuquerque—New Mexico

FREE PRICE LIST

If you are looking for Fresh Tested Cactus Seed, Novelty Cactus Stationery, Cactus and Succulent Books, Greeting Cards or Indian Relics, etc., then you should have a copy of our new 1954 price list.

CACTUS & CRAFT SHOP

191 So. Main St., Mtd. Del., Middleboro, Mass., U.S.A.

SEED TIME

The following seeds herein offered are fresh 1953 crop. Amount of seed varies in each packet according to scarcity of item. All seeds sent postpaid in the U.S., Foreign orders add 10%. Minimum order \$1.00, cash or check.

Carnegiea gigantea

<i>Mam. heyderi</i>	<i>Rebutia violaciflora</i>
<i>Mam. heyderi-macdonzali</i>	<i>Echinomastus johnsonii</i>
<i>Mam. tetracantha</i>	<i>Coryphantha pectinata</i>
<i>Mam. microcarpa</i>	<i>Ariocarpus fissuratus</i>
<i>Mam. microcarpa-auricarpa</i>	<i>Opuntia phaeacantha</i>
<i>Mam. wrightii</i>	<i>Echinocereus rigidissimus</i>
<i>Mam. haageana</i>	<i>Ferocactus wislizenii</i>
<i>Mam. elongata</i>	<i>Ferocactus acanthodes</i>
<i>Mam. phelosperma</i>	<i>Astrophytum myriostigma</i>
<i>Mam. elegans</i>	<i>Astrophytum asterias</i>
<i>Mam. bocasana</i>	<i>Echinopsis</i> —mixed seed packet
Mixed cactus seed packet (many species)	

All above seed packets are twenty-five cents each.
 One each of above packets—Special \$5.00.

"World Famous"

ROCKING HORSE CACTUS GARDENS

2415 W. Glenrosa Phoenix, Arizona

"CALIFORNIA CACTUS"

We are fortunate in being able to offer the original monograph by Edgar M. Baxter bound in heavy Morocco Cover paper stamped in silver. This 1935 edition has long been out of print and has sold for as much as \$7.50. If you are studying your cacti by states, we urge you to obtain a copy now. Postpaid \$2.00. Please add sales tax on California orders.

THE MAMMILLARIA HANDBOOK—Dr. R. T. Craig, on Mammillarias, contains 400 pages bound in heavy buckram and the same size as the smaller edition of the Britton and Rose Reprint. There are 236 species fully described and illustrated with 300 photographs. \$7.50. Postage in U.S.A. 15c, foreign 50c. Abbey Garden Press, 132 W. Union St., Pasadena 1, Calif.



Yuccas of the Southwest by John Milton Webber. Agriculture Monograph No. 17, U. S. Department of Agriculture. There are 100 pages of text and 72 excellent photographs. Some of the chapters are: Ecology, Yucca enterprises, Plant characteristics, Sections of the genus *Yucca*, Key, Fruit and the yucca moth, Seeds and germination, Root and shoot characteristics, Growth rate, Transplanting and propagation, Literature and Index. Send \$1 to Abbey Garden Press and we will secure a copy for you.

International Code of Botanical Nomenclature adopted by the Seventh International Botanical Congress, Stockholm, July, 1950. 226 pages cloth bound. \$5.25 postpaid.

"THE MORPHOLOGY OF CACTI"

By DR. FRANZ BUXTBAUM

Part II, The Flower

Our scientific contribution of the year is this second section which treats with the morphology of cactus flowers. There are 80 pages containing 300 illustrations, most of which are original drawings. After years of painstaking effort on the part of Dr. Franz Buxbaum the author; Dr. Edwin Kurtz, the editor; and the publisher; this second part is available for \$3.50 postpaid. Part I, "Morphology of the Root and Stems of Cacti" is still available for \$3.50. Part III, which deals with the fruit and seeds is now in production.

ARIZONA CACTUSES

The second edition of "Arizona Cactuses" by W. Taylor Marshall is now available. Many of the illustrations have been improved; 64 species and 44 varieties are described as native to Arizona; there are eight additional pages. The price of \$1 is a very reasonable price for this valuable reference book. Available from Abbey Garden Press, 132 W. Union Street, Pasadena. Please add 10c for postage and mailing.

ABBEY GARDEN PRESS

132 West Union Street Pasadena 1, California

USEFUL ALGAE

The December issue of *Scientific American* included an interesting article, "The Useful Algae," by F. J. Weiss. I quote a portion of a paragraph as follows:

"Indeed, terrestrial algae play an essential part in maintaining soil fertility: they bind soluble mineral and nitrogen compounds into organic form and preventing leaching losses; they decompose organic matter; they help nitrogen fixation; they contribute to the aeration of the root system by absorbing carbon dioxide and giving off oxygen, and finally, they form stable colloidal systems, which have a most beneficial effect upon soil texture. As a matter of fact, the alginic acid of brown algae resembles the recently synthesized soil conditioner called Krilium."

This certainly raises the question as to the advisability of the use of algicides such as copper sulphate on pots and soil. On the other hand, anyone who has attempted to keep algae out of otherwise sterile mediums will attest to the fact that it is not necessary to inoculate soil with algae. However, for the benefit of the inoculists it might be well to point out that the grown algae (class Phaeophyceae) are all marine, none are unicellular, and may reach huge proportions. The kelps reach a length of 100 to 150 feet in length.

BOB GARDNER

